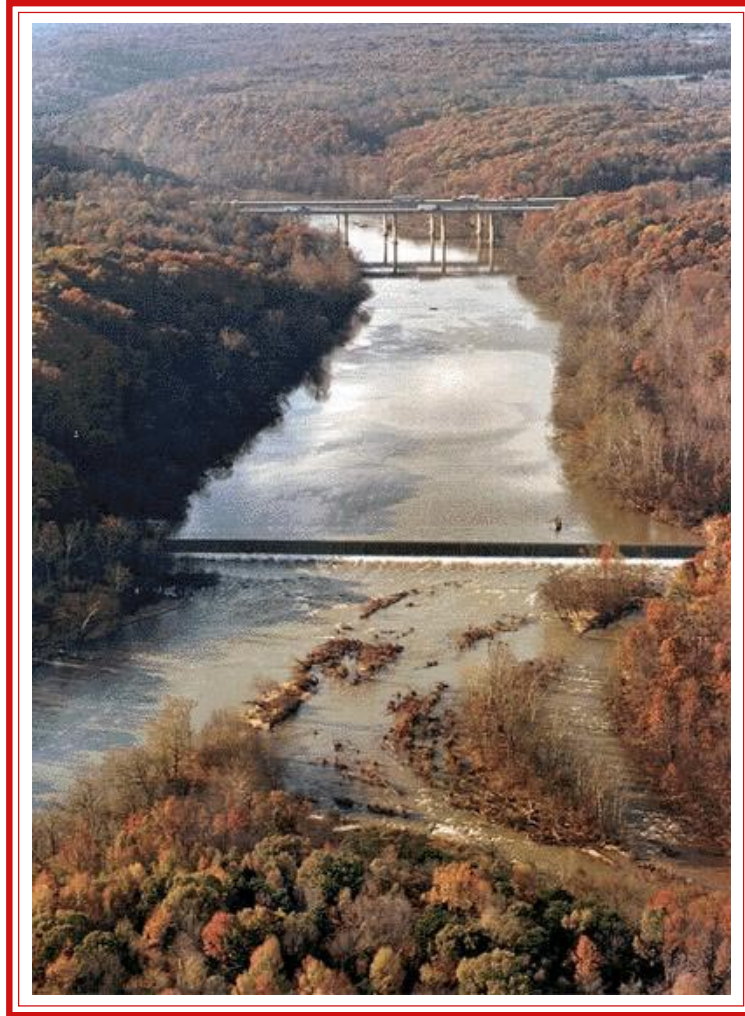


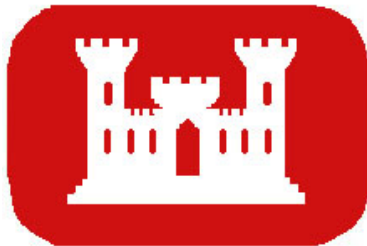
Environmental Site Assessment



Proposed Embrey Dam Sediment Disposal Site

Submitted: February 28, 2002

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EXECUTIVE SUMMARY

The United States Army Corps of Engineers (USACE) contracted IMS Environmental Services (IMS) to perform an Environmental Site Assessment (ESA) in January and February of 2002, to evaluate any recognized environmental conditions associated with the proposed Embrey Dam sediment disposal site located at the north end of Wicklow Drive on the Rappahannock River watershed in Fredericksburg, Virginia.

A portion of the subject property is planned to be the disposal site of the estimated 336,000 cubic yards of impounded sediment, located upstream of the Embrey Dam. The site location is illustrated in Figure 1. To prepare the subject property for sediment disposal, extensive excavation of the soil material must take place in order to build a large soil berm around the circumference of the proposed disposal area. Manmade soil berms located on the southwestern and northwestern portions of the subject property can be relocated or used in addition to other constructed soil berms to serve as a barrier around the river sediments deposited on site when the Embrey Dam is removed.

On January 14, 2002, the USACE and IMS were onsite to conduct a site walkover of the subject property. IMS was prepared to hand auger and collect soil samples from several locations within the proposed disposal area on the subject property. During this site investigation several large concrete structures, debris piles, non-native soil berms, and soil piles were discovered on the subject property. Further investigation of the composition and condition of the debris piles, soil berms, and soil piles was warranted as necessary by the USACE and IMS.

The USACE and IMS returned to the subject property on January 28, 2002 to excavate test pits. The test pits were excavated on January 28, 2002, in the locations shown in Figure 2, to evaluate the composition of the soils on the property prior to excavation in association with the proposed soil berm construction. Test pits were also excavated around concrete structures and debris piles in order to estimate and quantify the amount of site cleanup that would be necessary before soil berm construction could take place.

During excavation activities around a debris pile on the eastern portion of the subject property (Figure 2), two non-labeled 55-gallon drums possibly containing hazardous materials were discovered. The two 55-gallon drums appeared to possibly have some contents still in them. One of these drums was marked as containing diesel, but the other drum was clearly not marked or labeled. At this time, excavation activities ceased in order to properly prepare a team of personnel to investigate the 55-gallon drums, and any other drums that may still exist intact in the subsurface of the debris pile located on the eastern portion of the subject property.

On February 5, 2002, the USACE and IMS returned to the eastern portion of the subject property to investigate and secure the non-labeled 55-gallon drums discovered on the surface of the debris pile, and the remaining debris that was not investigated on January 28, 2002.

IMS has determined that there will be considerable costs associated with the site clean up and removal of debris at the subject property. There is a tire pile, consisting of approximately 31 large tractor tires located on the northwestern corner of the property. The volume of the debris is approximately two hundred and eighty-eight (288) cubic yards. On the eastern portion of the property, on the other side of the dirt access road there is a large pile of metal drums. The volume of the debris is approximately four hundred and forty-four (444) cubic yards.

Several concrete structures will need to be removed in order to build a berm around the perimeter of the proposed disposal area on the subject property. Large piles of debris such as tires, old cement mixers, metal screen material, automobile parts and boat parts are present in specific locations on the subject property.

Besides these notable piles of debris, there are piles of debris, including items such as soda cans, beer bottles, refrigerators and scrap metal. In summary, a significant amount of site cleanup would be necessary in order to properly prepare the proposed Embrey Dam sediment disposal site.

The analytical results obtained from the test pit samples (TP-10-2, TP-28-4, and TP-31-6) revealed only a few detectable analytes above the EPA Region III established RBCs in a residential setting. Arsenic was detected above the RBC in test pit TP-10, but this result is within the mean soil background range for arsenic. TPH-DRO was detected in test pit TP-10 at a concentration of 4,390 ppm, which is well above the Virginia Department of Environmental Quality (VDEQ) reportable limit of 100 ppm. Arsenic was detected above the RBC in test pit TP-28, but this result is within the mean soil background range for arsenic. All detected TAL-metals were within their respective mean background soil ranges. The overpacked drum, that disposal sample DS-1 was collected from should be disposed of at a licensed disposal facility.

According to an environmental record search of State and Federal databases, the subject property located at the end of Wicklow Drive in Franklin, Virginia is not listed in any of the databases as provided by EcoSearch Environmental Resources, Inc (EcoSearch) (Appendix H). In addition, none of the adjacent or surrounding properties were listed in the State or Federal databases searched by EcoSearch.

1.0 INTRODUCTION

The United States Army Corps of Engineers (USACE) contracted IMS Environmental Services (IMS) to perform an Environmental Site Assessment (ESA) in January and February of 2002, to evaluate any recognized environmental conditions associated with the proposed Embrey Dam sediment disposal site located at the north end of Wicklow Drive on the Rappahannock River watershed in Fredericksburg, Virginia.

The Embrey Dam was constructed in 1855 by the Fredericksburg Water Power Company. This dam was constructed of wood and located approximately 60 feet upstream from the current dam. The old dam (still visible under the water) was built on property purchased from the Rappahannock Navigation Company canal system in the early 1850's. This canal was converted to use water power and provided about 5,000 horsepower of water power to the city. A stone lock was located on the south end of the dam for boat passage. The original dam stood 18 feet tall.

Construction of the current dam was completed in August of 1909. This dam stands 22 feet high and use to provide about 8,000 horsepower of waterpower to the city. The Fredericksburg Water Power Company power plant and canal have since been shut down and the canal no longer runs to the old power plant. Around 1910, the Fredericksburg Water Power Company was purchased and renamed the Spotsylvania Water Power Company.

Today the dam still stands, but water is no longer actively diverted into the canal system (the last time the water was diverted to the canal was in the early 1960's). The canal runs just under 3 miles. The canal starts at the Fredericksburg side of the dam and ends at Princess Anne Street. At one end of Ford Street is a lock which ends the canal, and the other end is the remains of the old Virginia Electric and Power Company's Embrey Power Station (originally named Spotsylvania Water Power Company Power House Number 1).

The United States Senate passed an energy and water appropriations bill that includes \$2.5 million toward removal of the dam on the Rappahannock River. The United States House of Representatives must approve a similar appropriation before the budget bill goes to the President. If the money is appropriated, the USACE expects to remove the dam by 2003. The USACE is working on detailed demolition plans and an environmental assessment. The 91-year-old concrete structure has prevented migratory fish, such as shad and herring, from swimming upstream to their natural spawning habitats. The Embrey Dam is also considered as a nuisance, because of the safety risks. In 1987, a child fell from the dam and was killed. Virginia Governor Mark Warner has worked to shorten the timetable to remove the dam. Congress passed a provision two years ago that called for the federal government to pick up the estimated \$10 million removal costs. This will make the Rappahannock a "free flowing" river once again. Embrey is the only dam still in existence on the Rappahannock, which flows over 185 miles from the Blue Ridge Mountains to the Chesapeake Bay.

A portion of the site is planned to be the disposal site of the estimated 336,000 cubic yards of impounded sediment, located upstream of the Embrey Dam. The disposal site location is illustrated in Figure 1. To prepare the subject property for sediment disposal, extensive excavation of the soil material must take place in order to build a large soil berm around the circumference of the proposed disposal area. IMS was contracted to determine if there would be any recognized environmental conditions associated with the soil berm construction.

On January 14, 2002, the USACE and IMS were onsite to conduct a site walkover of the subject property. IMS was prepared to hand auger and collect soil samples from several locations within the proposed disposal area on the subject property. Sample locations were selected from portions of the site deemed as potential environmental threats to the construction activities, associated with building the soil berm around the proposed disposal area. During this site investigation several large concrete structures, debris piles, non-native soil berms, and soil piles were discovered on the subject property. Further investigation of the composition and condition of the debris piles, soil berms, and soil piles was deemed necessary by the USACE and IMS.

The USACE and IMS returned to the subject property on January 28, 2002 to excavate test pits. The test pits were excavated on January 28, 2002, to evaluate the composition of the soils on the property prior to excavation in association with the proposed soil berm construction. Test pits were also excavated around concrete structures and debris piles in order to estimate and quantify the amount of site cleanup that would be necessary before soil berm construction could take place. A description of the soil composition of each individual test pit is included in Appendix A. The locations of the test pits are shown in Figure 2.

During excavation activities around a debris pile on the eastern portion of the subject property (Figure 2), several drum containers of various sizes were encountered. Two non-labeled 55-gallon drums were discovered amongst the surface of the debris pile. The two 55-gallon drums appeared to possibly have some contents still in them. One of these drums was marked as containing diesel, but the other drum was clearly not marked or labeled. At this time, excavation activities ceased in order to properly prepare a team of personnel to investigate the 55-gallon drums, and any other full drums that may still exist within the debris pile located on the eastern portion of the subject property.

On February 5, 2002, the USACE and IMS returned to the eastern portion of the subject property to investigate the non-labeled 55-gallon drums, and the remaining debris that was not investigated on January 28, 2002. IMS was outfitted in Saranex suits and full-face respirators, in order to overpack the two unmarked 55-gallon drums discovered on January 28, 2002. A site safety officer and decontamination personnel set up a decontamination station for the personnel conducting the drum and debris investigation. An IMS Quick Response Trailer, outfitted with absorbent, sorbent boom, oil dri, and open top drums, has stayed on site in case any of the encountered drums were damaged or discovered to be leaking during investigation.

IMS secured the 55-gallon drum marked diesel in a 90-gallon polyurethane overpack to stabilize and prepare the drum for sampling. The other unmarked 55-gallon drum was discovered to be empty. The majority of the remaining drums on the surface of the debris pile were already rusted through, and completely empty. IMS also dug test pits in search for any drums, which may be buried in the subsurface. No additional drums full of liquid were encountered during test pit excavation on this date.

This ESA delineates the vertical and horizontal extent of fill material and its constituents in the zero (0) foot to minus six (-6) feet proposed excavation areas outlined in the original Boundary and Topography Survey. IMS used Environmental Protection Agency (EPA) Risk Based Concentrations (RBCs) and mean background soil ranges for metals as a comparison guideline for the soil samples collected during this site investigation and assessment.

2.0 SITE DESCRIPTION

The Rappahannock River is located approximately 50 miles south of Washington, D.C. at the junction of Interstate 95 (I-95) and Virginia State Highway 639. The Rappahannock River flows entirely through Virginia. The Rappahannock rises near Chester Gap in the Blue Ridge Mountains east of Front Royal and flows southeastward past Fredericksburg (head of navigation and of tidewater) to enter the Chesapeake Bay after a course of 212 miles (341 km). The Rappahannock River Basin watershed consists of 2,800 mi². Population and economic growth along the Rappahannock River have created many environmental concerns within the river basin. Non-point sources, point source discharges, and spills from commercial and industrial sources over several hundred years have reduced water quality and have impacted river sediments. This river contributes about 3 percent of the total streamflow, 2 percent of the total nitrogen load, and 8 percent of the total phosphorus load, which is delivered annually from the nontidal part of the Chesapeake Bay Basin. Nonpoint sources contribute the majority of the nutrient loads to this basin, although a few point sources, such as wastewater treatment plants, are also present (Belval and Sprague, 1999).

The subject property consists of an open grassy field, low-lying shrubbery, and some new growth trees. Several large boulders are scattered throughout the property as well. A dirt access road runs through the property all the way down along the river (to the north of the subject property) to the old rock quarry. The landscape is scattered with the remnants of the former rock quarry and aggregate processing facility.

As previously mentioned, IMS conducted a site reconnaissance of the subject property and surrounding area on January 14, 2002. The site inspection included a visual survey of the subject property. Site photographs or photodocumentation of this event are included in Appendix B. The visual survey was conducted to search for any recognized environmental conditions, which may have adversely affected the environmental integrity of the subject property.

The inspection of the subject property revealed the following: the frame of an old sheet metal building, several old concrete structures, a large pile of tires and scattered automobile debris, a large pile of drums and scrap metal, several manmade soil berms and soil piles, and various other debris scattered throughout the surface of the property. No water wells were noted on the subject property. The following is a description of the observations made during the on-site inspection conducted on January 14, 2002. Figure 2 illustrates the locations of these findings.

Much of the surface area of the subject property is covered with grass. A series of manmade soil berm surrounds the southwestern perimeter of the proposed sediment disposal area. These soil berms were designated as the locations for test pits TP-1, TP-2, and TP-3. No adverse environmental conditions were recognized in conjunction with the soil of any of these test pit locations. The soil in these manmade soil berms appeared to consist of nonnative fill sand material. The soil composition and description of these test pits are detailed in Appendix A.

A concrete slab is located adjacent, just to the northeast of these manmade soil berms. This concrete slab is fourteen (14) inches thick, sixty-five (65) feet long, and ten (10) feet wide. The eastern edge of the concrete slab was designated as the location for test pit TP-4. No adverse environmental conditions were recognized in the soil of test pit TP-4. A detailed soil composition and description of this test pit is included in Appendix A.

A concrete rack structure is located to the east of the concrete slab. This structure consists of three concrete walls, approximately fifty (50) feet in length, which run parallel with respect to each other. Each wall is approximately eight to ten feet away from the adjacent wall. Approximately five feet of wall is exposed above grade, and another five feet of each wall is buried in the subsurface. The prior use of this concrete structure is unknown. The concrete rack structure was designated as the location for test pits TP-5, TP-6, TP-7, and TP-8 in order to assess the amount of concrete that would need to be removed in preparation for the Embrey Dam sediment disposal site. The exact locations of these test pits are shown on Figure 2. The soil composition and description of these test pits are included in Appendix A.

The frame of an old sheet metal building is located next to the site access road to the southeast of the concrete rack structure. The former building dimensions are thirty-six (36) feet by sixty (60) feet. Scattered debris is located inside the frame of the old building. The southern side of the sheet metal building was designated as the location for test pit TP-9, and test pit TP-10 was excavated inside the building as displayed in Figure 2. A slight petroleum odor was noted in test pit TP-10. Therefore, a soil sample was collected from this test pit location. Further discussion of the soil sample collected from test pit TP-10 is included in Section 4.1.1. The soil composition and description of these test pits are included in Appendix A.

To the north of the building frame, there is a large concrete structure built into a manmade hillside. The concrete part of this structure is approximately twenty feet high, and several large chains and a wrecking ball are laying at the top of the structure on the hillside. This structure

appears to be where the rock was crushed and loaded onto the trucks for distribution, when the facility was operating. Test pit TP-11 was excavated in front of the large concrete structure. Test pits TP-12 and TP-13 were excavated on top of the manmade hillside, as shown in Figure 2. No adverse environmental conditions were identified in the soil of any of the test pits TP-11 through TP-13. The soil composition and description of these test pits are included in Appendix A.

The remnants of an old motor boat are located between the dirt access road and this hillside structure. Test pit TP-14 was excavated at the bottom of the northern slope of the man-made hillside relatively close to the old motor boat debris. No adverse environmental conditions were identified in conjunction with the soil of test pit TP-14. The soil composition of this test pit is detailed in Appendix A.

There is a tire pile, consisting of approximately 30 large tractor tires located on the northwestern corner of the property. Old automobile parts, drums full of scrap metal, and boulders are intertwined throughout this tire pile. The dimensions of the pile of tires are approximately sixty-five (65) feet long by twenty (20) feet wide by six (6) feet high. The tire pile was selected as the location for test pits TP-15 and TP-16. Petroleum impacted soil was not identified in either test pit excavated beneath the tire pile and automotive part debris. The soil composition and description of these test pits are included in Appendix A.

A large pile of debris consisting of tires, old cement mixers, and metal screen material is located on the western part of the site behind the rock-loading hillside area. Various parts of this debris pile were selected for the excavation of test pits TP-17 through TP-22. No adverse environmental conditions were recognized in the soil of any of the test pits TP-17 through TP-22. The soil composition and description of these test pits are included in Appendix A.

Test pit TP-23 was excavated under a pile of debris consisting of old soda bottles, beer cans, and refrigerator parts. This debris pile is located on the northwestern portion of the subject property. No adverse environmental conditions were recognized in conjunction with the soil of this test pit location. The soil composition and description of this test pit are discussed in Appendix A.

Test pits TP-24 through TP-27 were excavated into a hillside, which is located adjacent to the access road as it slopes downward and around to the old rock quarry. The access road curves around on the northern portion of the subject property. No adverse environmental conditions were recognized in conjunction with the soil of any of these test pit locations. The soil composition and description of these test pits are discussed in Appendix A.

On the eastern portion of the subject property, approximately one eighth of a mile from the eastern side of the dirt access road, there is a large pile of old metal drums and metal debris. The dimensions of the pile of drums, and scattered metal debris are approximately three hundred (300) feet long by twenty (20) feet wide by four (4) feet high. This area is where a

proposed hauling road is to be built, once the USACE is ready to remove the Embrey Dam. This drum pile was selected as the location for test pits TP-28 through TP-31. Two soil samples TP-28-4 (a composite sample of test pits TP-28 through TP-30) and TP-31-6 were collected from these test pit locations. Further discussion of the soil sample TP-28-4 is provided in Section 4.1.2. Further discussion of the soil sample TP-31-6 is provided in Section 4.1.3. No adverse environmental conditions were recognized in conjunction with the soil of any of these test pit locations. Detailed soil compositions and descriptions of these test pits are discussed in Appendix A.

A concrete truck scale is located on the southeastern portion of the subject property. This truck scale is located approximately ten to fifteen feet to the east of the dirt access road, and to the southwest of the drum pile. The dimensions of the concrete truck scale are approximately thirty (30) feet long by fifteen (15) feet wide by five (5) feet deep. This truck scale was selected as the location for test pit TP-32.

No significant spills were noted or reported during the site inspection on January 14, 2002. There were no pole-mounted or floor-mounted electrical transformers identified on the subject property. Therefore, electrical transformers do not appear to present an environmental threat to the subject property.

Inspection of the subject property revealed some scattered trash such as paper, plastic, glass, and wood. These materials are common to any developed property and are not of any significant environmental concern.

In summary, visual inspection of the subject property revealed the following points of interest:

1. Several manmade soil piles and soil berms;
2. Several concrete structures of various dimensions;
3. The frame of an old sheet metal building;
4. A large pile of tires and scattered automobile debris;
5. A large pile of empty drums and scrap metal; and
6. Various other debris and trash scattered throughout the subject property.

Visual inspection of the subject property did not reveal any of the following:

1. Evidence of existing water wells;
2. Stressed vegetation, or unusual alteration of vegetation caused by

hazardous substances or burned debris;

3. Surface Impoundments, leachate seeps, lagoons, or any unusual odors;
4. Generators, electromagnets, or transformers, which may have been manufactured or installed before 1978, and may contain PCB dielectric fluid in excess of 50 parts per million.

2.1 Review of Historical Aerial Photographs

Aerial photographs of the City of Fredericksburg obtained from the Virginia Department of Transportation (VDOT) were reviewed as part of the investigation in order to determine the historical use(s) of the subject property, and adjacent properties. Also, the aerial photographs were reviewed in order to identify any evidence of previous development or industrial uses, particularly those uses, which might environmentally impact the subject property. The aerial photographs were also reviewed for indications of excavations or backfilling on or near the subject property. Copies of the aerial photographs are included as Appendix C.

The earliest aerial photograph reviewed was taken on October 22, 1964. The subject property appears to be a developed full-scale operation in this picture. Several trucks and a building are pictured in the center of the subject property. The quarry still appears to be close to ground elevation (barely excavated) in this photograph. The surrounding properties to the north, east, and west are pictured as undeveloped lots covered in forest in the 1964 aerial photograph. Farmland is pictured on a developed lot to the southwest in the 1964 aerial photograph.

In the aerial photographs taken on July 28, 1977, the southern surrounding property is pictured to be more developed than the aerial photograph taken in 1964. Several townhouse units and apartment units have been built on the property to the south. The 1977 aerial photograph pictures the subject property as it appears today. It appears that the quarry operation has been shut down in this photograph, and the quarry itself is full of water. The building still remains in the center of the subject property. The properties to the north, east and west are pictured as they were in the 1964 aerial photograph.

In the aerial photographs taken on August 23, 1985, the subject property and surrounding properties are pictured as they are in the 1977 aerial photograph.

In the aerial photographs taken on August 20, 1998, the subject property and surrounding properties are pictured as they are in the 1985 aerial photograph.

In summary, the review of historical aerial photographs revealed no recognizable environmental condition on the subject property. However, due to the scale and quality of the aerial

photographs, any USTs, ASTs, water wells, or other similar environmental conditions could not be accurately identified.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Geology

The subject property is located within the Fall Zone, which encompasses the eastern edge of the Piedmont Province and western margin of the Atlantic Coastal Plain physiographic province. In general, the geology of this area consists of a thin wedge of early Cretaceous (Potomac Group) and Cenozoic (Pamunkey and Chesapeake groups and Quaternary formations) coastal plain sediments, which overlap onto early Mesozoic sedimentary and Paleozoic metamorphic and igneous rocks of the Piedmont. The sedimentary units record successive marine transgressions and are preserved as thin tabular sheets in the Upper and Middle Coastal Plain. The Tertiary formations are mostly marine in origin and Pleistocene deposits are fluvial-estuarine. The preservation of the relatively uneroded aggradational surfaces of the late Cenozoic formations has produced a stair-stepped topography on the coastal plain, whereas the Piedmont rocks have been weathered and eroded to a rolling landscape, in many places below the adjacent Upper Coastal Plain terrain (Johnson, et. al., 1987).

The surficial geologic unit at the subject property is the Potomac Formation. The Potomac Formation generally consists of light gray to pinkish and greenish quartzo-feldspathic sand, which is fine to coarse, pebbly, poorly sorted and commonly thick-bedded and trough-crossbedded. This sand is interbedded with gray to green, massive to thick-bedded sandy clay and silt, which is commonly, mottled red or reddish-brown. This formation also includes lesser amounts of clay-clast conglomerate and thin-bedded to laminated, carbonaceous clay and silt. In the inner Coastal Plain, the unit was deposited mainly in fluvial-deltaic environments, which intertongue with thin glauconitic sands of shallow-shelf origin. In some downdip areas, the uppermost part of the unit may be of the earliest Late Cretaceous Age. The thickness of this formation ranges from a featheredge at the western limit of outcrop to more than 3,500 feet in subsurface at the outermost boundary of the Coastal Plain (Mixon and others, 1989). These soil descriptions are consistent with the findings noted during the test pit excavations conducted on January 28, 2002.

3.2 Hydrogeology

The region around the site is located in the Fall Zone groundwater area. This is a transitional zone from the fall line up to ten miles wide, where the thin, younger coastal plain sediments begin to cover the older Piedmont rocks. Confined groundwater flows back upward into the unconfined aquifers, is withdrawn from wells, and flows through the confined aquifer and out of the area to provide recharge to regional aquifers. Water levels fluctuate in response to recharge associated with the Rappahannock River. Groundwater flow in the surficial aquifer is estimated

to flow north towards the Rappahannock River. Water supply wells were not found at the subject property.

Based on the Fredericksburg and Salem Church, Virginia 7.5-minute topographic maps, the subject property lies at an approximate elevation of 200 ft above sea level (Figure 1). The nearest surface water body is the Rappahannock River, which lies approximately 1,320-ft (0.25 miles) down-gradient and to the north of the site. Most of the surrounding area is served by public utilities, including water supplied by the City of Fredericksburg.

The City of Fredericksburg draws its water supply from the Motts Run Reservoir, which is located in Spotsylvania County. Based on visual observations and map inspection, the subject property does not appear to be located within a flood plain. The risk of flooding in the area is minimal based on surface elevations, river proximity, and the elevation of nearby surface waters relative to the subject property. Stormwater runoff from the southern portions of the subject property appears to flow either to the west into an unnamed valley or east into an unnamed small creek. Stormwater runoff from the northern portion of the subject property appears to flow downgradient to the north into the Rappahannock River.

4.0 SITE INVESTIGATION

On January 14, 2002, the USACE and IMS were onsite to conduct a site walkover of the subject property. The USACE and IMS returned to the subject property on January 28, 2002 to excavate test pits. IMS excavated twenty-seven (27) test pits, identified as test pits TP-1 through TP-27 on January 28, 2002. A site plan depicting the locations of the twenty-seven (27) test pits is shown in Figure 2.

On February 5, 2002, the USACE and IMS returned to the eastern portion of the subject property to investigate the non-labeled 55-gallon drums, and the remaining debris that was not investigated on January 28, 2002. Field sampling activities at this site were conducted on both January 28 and February 5, of 2002. Mr. Chris Murray of IMS conducted sampling, and Mr. Marc Gutterman of the USACE GeoEnvironmental Division chose the sample locations.

IMS excavated five (5) test pits, identified as test pits TP-28 through TP-32 on February 5, 2002. A total of thirty-two (32) test pits were excavated during the two-day subsurface investigation at this site. A site plan depicting the locations of the five (5) test pits is shown in Figure 2. Section 4.1 below is a narrative description of the test pits where analytical samples were collected.

4.1 Sampling Activities

The soil samples discussed below are identified by the type of sample, location number where the sample was taken, and the depth at which the sample was retrieved. For example, a soil sample taken from test pit 1 at three feet below ground surface (bgs) would be classified as TP-1-3. A complete list of laboratory analytical results is included in Appendix D.

IMS compared all of the detectable concentrations of all the analyzed constituents to the Environmental Protection Agency (EPA) Region III RBCs table (Appendix E) and the mean background soil ranges for metals (Appendix F) to determine the extent of HTW in the fill material. Results compared to the EPA Region III RBCs table are compared to the residential RBC level because the subject property is zoned as R-1 (Residential) according to the City of Fredericksburg Code and Compliance Office.

4.1.1 TP-10-2

Test pit TP-10 was located inside the building frame in the center of the subject property. Excavation commenced on January 28, 2002, at 1200 hours and continued down to a maximum depth of 2 feet bgs. The material representative of 0 to 2 feet bgs is native material. At 1215 hours, sampling personnel collected soil sample, TP-10-2, which is representative of the soil material from 0-2 feet bgs. At approximately 2 feet bgs, brown sand intermixed with debris from the former building was encountered. Photodocumentation of test pit TP-10-2 is included in Appendix B.

IMS submitted the collected soil sample (from test pit TP-10-2) to the Accutest Laboratory in Houston, Texas for the following analyses: target analytes list (TAL) metals using laboratory method SW846/6010B, benzene, toluene, ethylbenzene, and total xylenes (BTEX) using metals using laboratory method SW846/8260B; total petroleum hydrocarbons – gasoline range organics (TPH-GRO) using laboratory method SW846/8015B, and total petroleum hydrocarbons – diesel range organics (TPH-DRO) using laboratory method SW846/8015M. A complete list of laboratory analytical results is included in Appendix D.

Soil sample TP-10-2 collected from test pit TP-10 contained detected levels of TAL-metals, toluene (a constituent of BTEX), TPH-GRO, and TPH-DRO. Arsenic was the only TAL-metal constituent detected above the RBC (0.43 parts per million, ppm). Arsenic was detected at 2.1 ppm in test pit TP-10, but this result is within the mean soil background range for arsenic (0.1 – 40 ppm). TPH-DRO was detected in test pit TP-10 at a concentration of 4,390 ppm, which is above the Virginia Department of Environmental Quality (VDEQ) reportable limit of 100 ppm. A complete list of detected analytes, their respective concentration, the RBCs for each analyte (if available), and the mean background soil ranges is presented in Appendix G.

4.1.2 TP-28-4

Test pits TP-28-4 through TP-30-4 were located approximately 15 feet apart from each other, along the cross-section of the aforementioned drum pile. Excavation commenced on February 5, 2001 at 1045 hours and continued down to a maximum depth of 4 feet bgs. The material representative of 0 to 4 feet bgs is native material. At 1205 hours, sampling personnel, TP-28-4, representative of material at 4 feet bgs. This soil sample was a composite sample collected from test pits TP-28-4 through TP-30-4 (this composite sample is labeled as TP-28-4 in the analytical results for simplicity sake). At approximately 4 feet bgs, the field team encountered reddish brown sand. Photodocumentation of test pit TP-28-4 is included in Appendix B.

The collected soil samples was submitted to the Accutest Laboratory on February 5, 2002, for the following laboratory analyses: volatile organic carbons (VOCs) using laboratory method SW846/8260B, semi-volatile organic carbons (SVOCs) using laboratory method SW846/8270C, pesticides using laboratory method SW846/8081A, herbicides using laboratory method SW846/815, polychlorinated biphenols (PCBs) using laboratory method SW846/8082, TAL-metals using laboratory method SW846/6010B, and Toxicity Characteristic Leaching Procedure metals (TCLP-metals) using laboratory method SW846/6010B. A complete list of laboratory analytical results is included in Appendix D.

Soil sample TP-28-4, a composite soil sample collected from test pits TP-28 through TP-30, contained detected levels of PCBs (Aroclor 1260), TAL-metals, and one TCLP-metal (Barium). All detected analytes were in concentrations below their respective RBCs except for arsenic. Aroclor 1260 was detected in the soil sample at a level of 0.0105 ppm, which is below the RBC level of 0.32 ppm. Arsenic was detected at 1.2 ppm in test pit TP-28, but this result is within the mean soil background range for arsenic (0.1 – 40 ppm). All detected metals were within their respective mean background soil ranges. A complete list of detected analytes, their respective concentration, the RBCs for each analyte (if available), and the mean background soil ranges is presented in Appendix G.

4.1.3 TP-31-6

Test pit TP-31-6 was located approximately 55 feet northeast of TP-28-4. Excavation commenced on February 5, 2002, at 1130 hours and continued down to a maximum depth of 6 feet bgs. The material representative of 0 to 6 feet bgs is native fill material. At 1225 hours, sampling personnel collected soil sample, TP-31-6, representative of fill material at 6 feet bgs. At approximately 6 feet bgs, the field team encountered a reddish brown sand intermixed with scrap metal and rusted drum debris. Photodocumentation of test pit TP-31-6 is included in Appendix B.

The collected soil samples was submitted to the Accutest Laboratory on February 5, 2002, for the following laboratory analyses: volatile organic carbons (VOCs) using laboratory method SW846/8260B, semi-volatile organic carbons (SVOCs) using laboratory method SW846/8270C, pesticides using laboratory method SW846/8081A, herbicides using laboratory method SW846/815, polychlorinated biphenols (PCBs) using laboratory method

SW846/8082, TAL-metals using laboratory method SW846/6010B, and Toxicity Characteristic Leaching Procedure metals (TCLP-metals) using laboratory method SW846/6010B. A complete list of laboratory analytical results is included in Appendix D.

Soil sample TP-31-6 collected from test pit TP-31 contained detected levels of PCBs (Aroclor 1260), TAL-metals, and one TCLP-metal (Barium). All detected analytes were in concentrations below their respective RBCs. Aroclor 1260 was detected in the soil sample at a level of 0.172 ppm, which is below the RBC level of 0.32 ppm. All detected metals were within their respective mean background soil ranges. A complete list of detected analytes, their respective concentration, the RBCs for each analyte (if available), and the mean background soil ranges is presented in Appendix G.

4.1.4 DS-1

The 55-gallon drum disposal sample (DS-1) collected from the overpacked drum on February 5, 2002, at 1330 hours was collected by IMS personnel outfitted in Saranex suits and full-face respirators. IMS wore this level of personal protective equipment (PPE) in preparation for the complications associated with sampling drums containing unknown materials. The sample was collected using a drum pfeif. The material resembled hydraulic oil (a thick yellowish material), or a type of lubricant similar to hydraulic oil.

Disposal sample (DS-1) collected from the overpacked drum on February 5, 2002, was analyzed for the following disposal parameters: Ignitibility (Flashpoint) using laboratory method SW846/1010, and total petroleum hydrocarbons (TPH) using the TNRCC laboratory method 1005. A complete list of laboratory analytical results is included in Appendix D.

The disposal sample was analyzed for ignitibility and the ranges of TPH in order to assess the disposal options available for the 55-gallon overpack drum. Disposal sample DS-1 revealed that the contents of the 55-gallon overpack drum has an ignitibility (flashpoint) of greater than 210 ppm. TPH was detected in the following concentrations and respective percentages in the following carbon ranges for disposal sample DS-1: 167,000 ppm or 16.7% for carbon range C12-C28, 170,000 ppm or 17% for carbon range C28-C35, and 337,000 ppm or 33.7% for carbon range C6-C35. A complete list of laboratory analytical results is included in Appendix D.

4.2 Onsite Debris

There is a tire pile, consisting of approximately 30 large tractor tires located on the northwestern corner of the property. Remnants of old automobile parts, drums full of scrap metal, and boulders are scattered throughout this tire pile. The dimensions of the pile of tires are approximately sixty-five (65) feet long by twenty (20) feet wide by six feet high. The volume of the debris is approximately two hundred and eighty-eight (288) cubic yards. Photodocumentation of this debris pile is included in Appendix B.

On the eastern portion of the property, on the other side of the dirt access road there is a large pile of old metal drums. The dimensions of the pile of drums, and scattered metal debris are approximately one hundred fifty (150) feet long by twenty (20) feet wide by four (4) feet high. The volume of the debris is approximately four hundred and forty-four (444) cubic yards. Photodocumentation of this debris pile is included in Appendix B.

A concrete rack structure is located adjacent to the northwest of the building frame. This structure consists of three concrete walls, approximately fifty (50) feet in length, which run parallel with respect to each other. Each wall is approximately eight to ten feet away from the adjacent wall. Approximately five feet of wall is exposed above grade, and another five feet of each wall is buried in the subsurface. A concrete slab is located to the southwest of the concrete rack structure. This concrete slab is fourteen (14) inches thick, sixty-five (65) feet long, and ten (10) feet wide. To the north of the concrete rack structure, there is a large concrete structure built into a manmade hillside. The concrete part of this structure is approximately twenty feet high, and several large chains and a wrecking ball are lying at the top of the structure on the hillside. This structure appears to be where the rock was crushed up and loaded onto the trucks for distribution, when the facility was still open for business. A concrete truck scale is located on the southeastern portion of the subject property. This truck scale is located approximately ten to fifteen feet to the east of the dirt access road, and to the southwest of the drum pile. The dimensions of the concrete truck scale are approximately thirty (30) feet long by fifteen (15) feet wide by five (5) feet deep.

A large pile of debris such as tires, old cement mixers, and metal screen material is located to the western part of the site behind the rock-loading hillside area. The remnants of an old motor boat are located between the dirt access road and this hillside structure.

Besides these notable piles of debris, there are various other piles of debris, including items such as soda cans, beer bottles, refrigerators and scrap metal. These smaller piles are located all over the place on the subject property. A significant amount of site cleanup would be necessary in order to follow through with the dam sediment disposal project.

4.3 Investigation Derived Wastes

The sampling team performed test pitting and sample collection activities in a manner to minimize the generation of Investigation Derived Wastes (IDW). Upon completion of sample collection activities, the sampling team disposed of soil generated from the sample collection process by placing the material back into the test pit. Upon completion of sample collection activities, IMS disposed of personal protective equipment and sample gear as solid waste.

5.0 STATE AND FEDERAL RECORDS REVIEW

According to an environmental record search of State and Federal databases, the subject property located at the end of Wicklow Drive in Fredericksburg, Virginia is not listed in any of the databases as provided by EcoSearch (Appendix H). In addition, none of the adjacent or surrounding properties were listed in the State or Federal databases searched by EcoSearch. Therefore, according to this database search there is no evidence that the subject property has been impacted by adjacent or surrounding properties in terms of hazardous materials or petroleum by-products.

However, the Ecosearch report lists eight other sites, which are included in the Unmappable Sites list (Page 13, Appendix H). These orphan sites were not mapped due to poor or inadequate address information. A review of this orphan list did not identify any sites adjacent to or in the immediate vicinity of the subject property. Due to the distances of these listed sites from the subject property and the nature of their listings, it is unlikely that any of these sites could environmentally impact the subject property.

6.0 SUMMARY

The ESA at the proposed Embrey Dam sediment disposal site located at the north end of Wicklow Drive in Fredericksburg, Virginia was conducted in order to assess the condition of and the likelihood that the property could be used as the sediment disposal site for the sediment and dam debris associated with the scheduled removal of the Embrey Dam located on the Rappahannock River. IMS has determined that there will be considerable costs associated with the site clean up and removal of debris at the subject property. There is a tire pile, consisting of approximately 30 large tractor tires located on the northwestern corner of the property. The volume of the debris is approximately two hundred and eighty-eight (288) cubic yards. On the eastern portion of the property, on the other side of the dirt access road there is a large pile of metal drums. The volume of the debris is approximately four hundred and forty-four (444) cubic yards.

Several concrete structures will need to be removed in order to build a berm around the perimeter of the proposed disposal area on the subject property. Large piles of debris such as tires, old cement mixers, metal screen material, automobile parts and boat parts are present in specific locations on the subject property.

In addition to these notable piles of debris, there are other piles of debris, including items such as soda cans, beer bottles, refrigerators and scrap metal. In summary, a significant amount of site cleanup would be necessary in order to properly prepare the proposed Embrey Dam sediment disposal site.

The manmade soil berms located on the southwestern and northwestern portions of the subject property can be relocated or used in addition to other constructed soil berms to serve as a barrier around the river sediments deposited on site when the Embrey Dam is removed.

The analytical results from the test pit samples (TP-10-2, TP-28-4, and TP-31-6) revealed only a few detectable analytes above the EPA Region III established RBCs in a residential setting. Arsenic was detected above the RBC in test pit TP-10, but this result is within the mean soil background range for arsenic. TPH-DRO was detected in test pit TP-10 at a concentration of 4,390 ppm, which is above the Virginia Department of Environmental Quality (VDEQ) reportable limit of 100 ppm. Arsenic was detected above the RBC in test pit TP-28, but this result is within the mean soil background range for arsenic. All detected TAL-metals were within their respective mean background soil ranges. The overpacked drum, that disposal sample DS-1 was collected from should be disposed of at a licensed disposal facility.

7.0 LIMITATIONS

This ESA report offers our professional opinion as to whether a potential environmental hazard exists on the subject property or in the vicinity of said property, and if there is a possibility that the subsurface has been environmentally impacted. It is impossible to know for an absolute fact that a site is free of hazardous substances even with extensive subsurface testing.

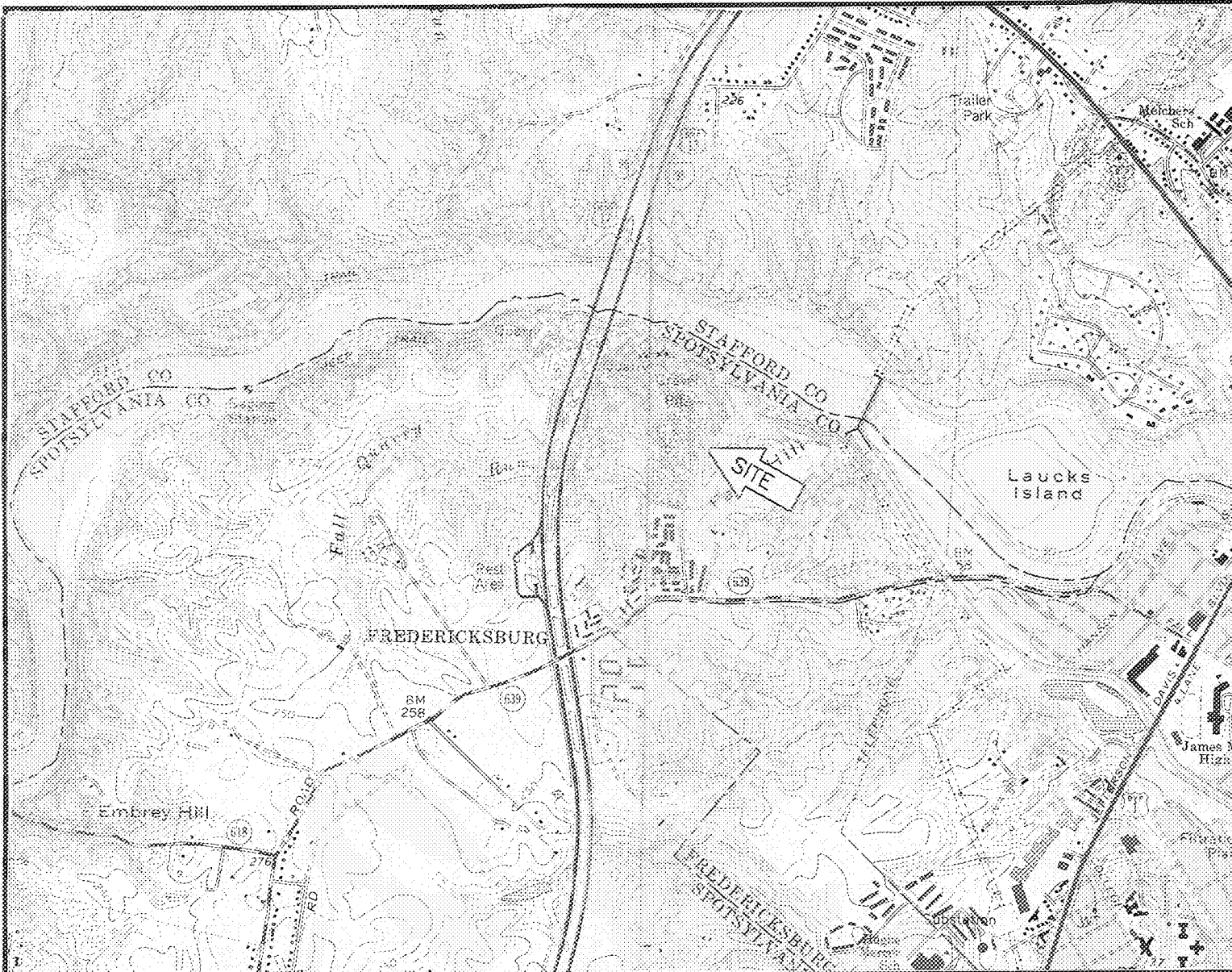
The conclusions and recommendations contained in this report are based upon observations at the site, reviewed documentation, reviewed test results, interviews, and other information provided or from previous experience in this area. It is assumed the data and other information compiled for this report are reasonably accurate. It must be recognized that available agency records, addresses, maps, and other information reviewed are often incomplete, contain errors, are outdated, may list alternate facility names or addresses, or may provide otherwise misleading data. The conclusions and recommendations of this report are based on a limited review of the site and cannot provide complete assurance that all liabilities were detected.

This ESA report is prepared for the exclusive use of the USACE. IMS will accept no responsibility for damages or claims resulting from past or future environmental degradation. Additionally, the passage of time may result in a change in the environmental characteristics at the site and surrounding properties. This report is considered to be a reasonably accurate representation of site conditions as they existed the date this report was prepared (February 28, 2002).

REFERENCES CITED

- Belval, D.L., and Sprague, L.A., 1999, Monitoring Nutrients in the Major Rivers Draining to Chesapeake Bay: U.S. Geological Survey Water-Resources Investigations Report 99-4238.
- Environmental Protection Agency Region III Risk-Based Concentration Table - October 2001 Update.
- Johnson, G.H., Goodwin, B.K., Ward, L.W., and Ramsey, K.W., 1987. Tertiary and Quaternary Stratigraphy Across the Fall Zone and Western Coastal Plain southern Virginia. Geological Excursions in Virginia and North Carolina. Southeastern Section-Geological Society of America, 36th Annual Meeting, March 25-27, 1987, Norfolk, Virginia.
- Mixon, R.B., Berquist, C.R. Jr., Newell, W.L. and Johnson, G.H., 1989. Geologic Cross Section of the Coastal Plain and Adjacent Parts of the Piedmont, Virginia. U.S. Geological Survey, Miscellaneous Investigation Series, Map 1-2033, sheet 1 of 2.
- Overcash, M.R. and Pal, D., 1979. Design of Land Treatment Systems for Industrial Waste – Theory and Practice. Ann Arbor Science Publishers, Inc. P.O. Box 1425, Ann Arbor, Michigan 48106.
- U.S.G.S. 7.5-Minute Topographic Map of the Fredericksburg, Virginia Quadrangle. Photorevised 1986. Scale 1:24,000.
- U.S.G.S. 7.5-Minute Topographic Map of the Salem Church, Virginia Quadrangle. Photorevised 1986. Scale 1:24,000.

FIGURES



Legend: 3223Topo

Source:

Fredericksburg, VA,
U.S.G.S. 7.5-minute
topographic series,
photorevised 1984.

Salem Church, VA,
U.S.G.S. 7.5-minute
topographic series,
photorevised 1984.

Site Location:

Embrey Dam
Project Site - USACE
Wicklow Drive
Fredericksburg, Virginia

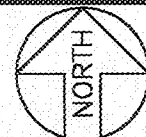


Figure 1: Portions of U.S.G.S. Fredericksburg and Salem Church, Virginia topographic maps illustrating the location and topography of the site.

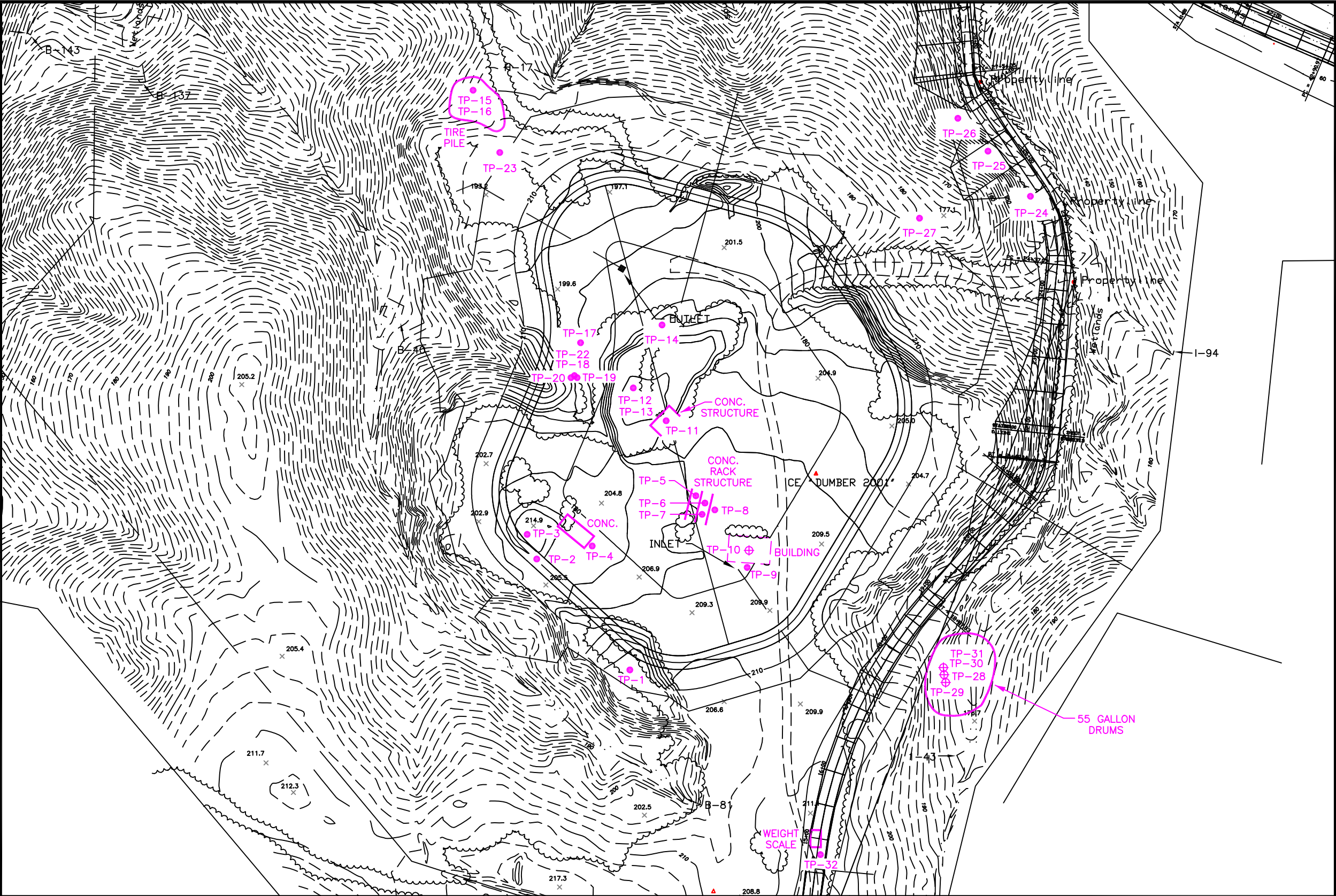


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P.O. BOX 1779
Norfolk, Virginia 23501-1779

Project No: 3223Topo
Prepared By: CJS
Date: February 18, 2002

Approximate Scale:

1 : 24,000



Legend:

351.3223

●

Test Pit Location

⊕

Test Pit/
Sample Location

Figure 2: Site map illustrating the locations of test pits and sample points.

Site Location:
Embrey Dam Project Site
USACE
Wicklow Drive
Fredericksburg, Virginia



IMS
ENVIRONMENTAL
SERVICES

IMS ENVIRONMENTAL SERVICES
P.O. BOX 1779
Norfolk, Virginia 23501-1779

Project No: 351.3223
Prepared By: CJS
Date: March 19, 2002

Approximate Scale:
0 50 100 150
1" = 150'

APPENDIX A:

Detailed Description of Fill Material in Test Pits

Detailed Description of Fill Material in Test Pits

Test Pit	Geographic Coordinates (Va State Plane NAD83, NAVD 88)	Feet BGS	Description of fill material
TP-1	6801531 N 11770204 E	0 - 4	Non-native grayish crush and run material
TP-2	6801693 N 11770068 E	0 - 3	Non-native, reddish river rocks mixed with reddish gravel material
TP-3	6801729 N 11770054 E	0 - 3	Non-native, reddish river rocks mixed with reddish gravel material
TP-4	6801712 N 11770149 E	0 - 1	Native topsoil mixed with grassroots and onion vegetation, underneath 14" concrete slab
TP-5		0 - 1	Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris
		1 - 5	Reddish-brown, sandy clay material, dry
TP-6		0 - 1	Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris
		1 - 6	Reddish-brown, sandy clay material, dry

Detailed Description of Fill Material in Test Pits

Test Pit	Geographic Coordinates (Va State Plane NAD83, NAVD 88)	Feet BGS	Description of fill material
TP-7		0 - 1 1 - 5	Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris Reddish-brown, sandy clay material, dry
TP-8		0 - 1 1 - 6	Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris Reddish-brown, sandy clay material, dry
TP-9		0 - 2.5	Native, grayish, fine-medium sandy material, little f-gravel, dry
TP-10		0 - 2	Native, brown, sandy material, intermixed with debris from the former building Slight petroleum odor
TP-11	6801895 N 11770257 E	0 - 0.5 0.5 - 4	Topsoil Native, grayish, fine-medium sandy material, little f-gravel, dry
TP-12	6801943 N 11770209 E	0 - 1 1 - 5	Topsoil Indigenous, light brown, sand, boulders lining inside of the test pit

Detailed Description of Fill Material in Test Pits

Test Pit	Geographic Coordinates (Va State Plane NAD83, NAVD 88)	Feet BGS	Description of fill material
TP-13	6801943 N 11770209 E	0 - 1 1 - 4	Topsoil Indigenous, light brown, sand, boulders lining inside of the test pit
TP-14	6802035 N 11770251 E	0 - 1 1 - 4	Crush and run Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris
TP-15 and TP-16	6802378 N 11766975 E	0 - 3	Located next to tire pile. Surface covered with boulders, scrap metal, and tires. Native, grayish, fine-medium sandy material, little f-gravel, dry, mixed with wood debris
TP-17	682009 N 11770132 E	0 - 1 1 - 4	Topsoil Non-native, light-brown, fine-medium sandy fill material, dry
TP-18	6801961 N 11770123 E	0 - 3	Surface covered with scrap metal debris and concrete chunks Reddish-brown, sandy clay material, dry
TP-19	6801958 N 11770127 E	0 - 3	Surface covered with scrap metal debris and concrete chunks Reddish-brown, sandy clay material, dry

Detailed Description of Fill Material in Test Pits

Test Pit	Geographic Coordinates (Va State Plane NAD83, NAVD 88)	Feet BGS	Description of fill material
TP-20	6801958 N 11770122 E	0 - 3	Surface covered with scrap metal debris and concrete chunks Reddish-brown, sandy clay material, dry
TP-21	6801958 N 11770118 E	0 - 3	Surface covered with scrap metal debris and concrete chunks Reddish-brown, sandy clay material, dry
TP-22	6801963 N 11770121 E	0 - 3	Surface covered with scrap metal debris and concrete chunks Reddish-brown, sandy clay material, dry
TP-23	68022877 N 11770014 E	0 - 1	Native topsoil mixed with soda cans, beer cans, refrigerator parts
TP-24	6802223 N 11770789 E	0 - 4	Native, light-brown, sand, mixed with large chunks of limestone
TP-25	6802289 N 11770727 E	0 - 4	Native, light-brown, sand, mixed with large chunks of limestone
TP-26	6802337 N 11770683 E	0 - 4	Native, light-brown, sand, mixed with large chunks of limestone

Detailed Description of Fill Material in Test Pits

Test Pit	Geographic Coordinates (Va State Plane NAD83, NAVD 88)	Feet BGS	Description of fill material
TP-27	6802191 N 11770627 E	0 - 1 1 - 3	Topsoil reddish, sandy clay, moist
TP-28	6801523 N 11770663 E	0 - 1 1 - 4	Topsoil Brown, sand, dry, mixed with drum debris
TP-29	6801513 N 11770665 E	0 - 1 1 - 4	Topsoil Brown, sand, dry, mixed with drum debris
TP-30	6801534 N 11770662 E	0 - 1 1 - 4	Topsoil Brown, sand, dry, mixed with drum debris
TP-31	6801534 N 11770662 E	0 - 1 1 - 6	Topsoil Brown, sand, dry, mixed with drum debris, oil cans, fire extinguishers, propane cylinders, cans bottles
TP-32		0 - 1 1 - 6	Topsoil Reddish-brown, sandy clay material, dry

APPENDIX B:
Photodocumentation



Top Left: View of old building located on the subject property.

Top Right: View of excavated test pit (TP-1).

Bottom Left: View of excavated test pit (TP-3).



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Top Left: View of excavated test pit (TP-10).

Top Right: View of excavated test pit (TP-11).

Bottom Left: View of drum pile located on the subject property.



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Top Left: View of tire pile located on the subject property.

Top Right: View of excavated test pit (TP-16), located under the tire pile.

Bottom Left: View of excavated test pit (TP-24), with limestone regolith.



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Top Left: View of 55 gallon drum containing unknown material located on the subject property.

Top Right: View of 55 gallon drum being overpacked for removal off site.

Bottom Left: View of excavated test pit (TP-31).



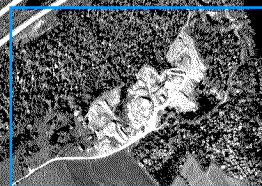
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P.O. BOX 1779
Norfolk, Virginia 23501-1779

APPENDIX C:
Aerial Photographs

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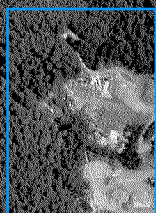


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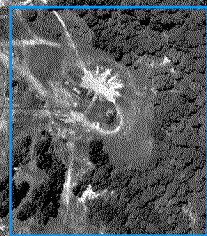
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APPENDIX D:

Analytical Results and Chains-of-Custody

Technical Report for

IMS Environmental

Army Corp of Engineers / Embrey Dam

Proj.No. 351.3223 Embrey Dam, Fredericksburg, VA

Accutest Job Number: T2250

Report to:

IMS Environmental

rreali@imsenv.com

ATTN: Rob Reali

Total number of pages in report: 6



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Ron Martino
Laboratory Manager

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Sample Summary

IMS Environmental

Job No: T2250

Army Corp of Engineers / Embrey Dam
Project No: Proj.No. 351.3223 Embrey Dam, Fredericksburg, VA

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
T2250-1	01/28/02	12:15 CM	01/30/02	SO	Soil	TP-10-02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Report of Analysis

Page 1 of 1

Client Sample ID: TP-10-02	Date Sampled: 01/28/02
Lab Sample ID: T2250-1	Date Received: 01/30/02
Matrix: SO - Soil	Percent Solids: 97.7
Method: SW846 8260B	
Project: Army Corp of Engineers / Embrey Dam	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F004617.D	1	01/30/02	BC	n/a	n/a	VF331
Run #2	F004660.D	1	02/02/02	BC	n/a	n/a	VF333

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	5.2	ug/kg	
108-88-3	Toluene	3.8	5.2	ug/kg	J
100-41-4	Ethylbenzene	ND	5.2	ug/kg	
1330-20-7	Xylene (total)	ND	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	111%	80-120%
2037-26-5	Toluene-D8	102%	102%	81-117%
460-00-4	4-Bromofluorobenzene	124% ^a	136%	74-121%
17060-07-0	1,2-Dichloroethane-D4	107%	111%	80-120%

(a) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	TP-10-02						
Lab Sample ID:	T2250-1				Date Sampled:	01/28/02	
Matrix:	SO - Soil				Date Received:	01/30/02	
Method:	SW846 8015				Percent Solids:	97.7	
Project:	Army Corp of Engineers / Embrey Dam						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE002272.D	50	02/01/02	BC	n/a	n/a	GEE127
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (C6-C10)	7.02	5.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	77%		50-125%
98-08-8	aaa-Trifluorotoluene	80%		50-125%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: TP-10-02**Lab Sample ID:** T2250-1**Date Sampled:** 01/28/02**Matrix:** SO - Soil**Date Received:** 01/30/02**Method:** SW846 8015 M SW846 3550B**Percent Solids:** 97.7**Project:** Army Corp of Engineers / Embrey Dam

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CC1425.D	50	02/05/02	SC	02/04/02	OP734	GCC158
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C10-C28)	4390	850	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^a		40-140%

(a) Outside control limits due to dilution.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis**Client Sample ID:** TP-10-02**Lab Sample ID:** T2250-1**Matrix:** SO - Soil**Date Sampled:** 01/28/02**Date Received:** 01/30/02**Percent Solids:** 97.7**Project:** Army Corp of Engineers / Embrey Dam**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	12300	100	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Antimony	0.65	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Arsenic	2.1	1.0	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Barium	102	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Beryllium	< 0.50	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Cadmium	< 0.50	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Calcium	2220	50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Chromium ^a	23.2	15	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Cobalt ^a	5.0	5.0	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Copper ^a	25.1	10	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Iron	20000	150	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Lead ^a	57.7	5.0	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Magnesium	3400	50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Manganese	214	15	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Mercury	< 0.064	0.064	mg/kg	1	02/11/02	02/13/02 JA	SW846 7471A	SW846 7471A
Nickel	7.2	2.0	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Potassium	3810	50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Selenium	< 0.50	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Silver	< 1.0	1.0	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Sodium	231	50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Thallium	< 0.50	0.50	mg/kg	1	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Vanadium ^a	41.4	5.0	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B
Zinc ^a	93.1	10	mg/kg	10	02/06/02	02/12/02 JA	SW846 6010B	SW846 3050B

(a) Elevated reporting limit due to difficult sample matrix.

RL = Reporting Limit

Page _____ of _____


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[illegible]

Technical Report for

IMS Environmental

Army Corp of Engineers / Embrey Dam

PO# 23243C / Project No. 351-3223

Accutest Job Number: T2280

Report to:

IMS Environmental

rreali@imsenv.com

ATTN: Rob Reali

Total number of pages in report: 22



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Ron Martino", with a long, sweeping horizontal line extending to the right.

Ron Martino
Laboratory Manager

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Sample Summary

IMS Environmental

Job No: T2280

Army Corp of Engineers / Embrey Dam
Project No: PO# 23243C / Project No. 351-3223

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
T2280-1	02/05/02	12:05 CM	02/07/02	SO	Soil	TP-28-4
T2280-2	02/05/02	12:25 CM	02/07/02	SO	Soil	TP-31-6
T2280-3	02/05/02	13:30 CM	02/07/02	SO	Solid	DS-1
T2280-1A	02/05/02	12:05 CM	02/07/02	SO	Soil	TP-28-4
T2280-2A	02/05/02	12:25 CM	02/07/02	SO	Soil	TP-31-6

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Report of Analysis

Client Sample ID: TP-28-4	Date Sampled: 02/05/02
Lab Sample ID: T2280-1	Date Received: 02/07/02
Matrix: SO - Soil	Percent Solids: 86.9
Method: SW846 8260B	
Project: Army Corp of Engineers / Embrey Dam	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B101872.D	1	02/19/02	BC	n/a	n/a	VB258
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	57	ug/kg	
71-43-2	Benzene	ND	5.7	ug/kg	
75-27-4	Bromodichloromethane	ND	5.7	ug/kg	
75-25-2	Bromoform	ND	5.7	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	ug/kg	
75-00-3	Chloroethane	ND	5.7	ug/kg	
67-66-3	Chloroform	ND	5.7	ug/kg	
75-15-0	Carbon disulfide	ND	11	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.7	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.7	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.7	ug/kg	
124-48-1	Dibromochloromethane	ND	5.7	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.7	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.7	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.7	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.7	ug/kg	
100-41-4	Ethylbenzene	ND	5.7	ug/kg	
591-78-6	2-Hexanone	ND	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	11	ug/kg	
74-83-9	Methyl bromide	ND	5.7	ug/kg	
74-87-3	Methyl chloride	ND	5.7	ug/kg	
75-09-2	Methylene chloride	ND	11	ug/kg	
78-93-3	Methyl ethyl ketone	ND	11	ug/kg	
100-42-5	Styrene	ND	5.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.7	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.7	ug/kg	
108-88-3	Toluene	ND	5.7	ug/kg	
79-01-6	Trichloroethylene	ND	5.7	ug/kg	
75-01-4	Vinyl chloride	ND	5.7	ug/kg	
1330-20-7	Xylene (total)	ND	17	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-28-4	Date Sampled:	02/05/02
Lab Sample ID:	T2280-1	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	SW846 8260B		
Project:	Army Corp of Engineers / Embrey Dam		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
2037-26-5	Toluene-D8	95%		81-117%
460-00-4	4-Bromofluorobenzene	102%		74-121%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%

ND = Not detected

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E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-28-4	Date Sampled:	02/05/02
Lab Sample ID:	T2280-1	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	SW846 8270C SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H02058.D	1	02/08/02	SC	02/08/02	OP754	EH138
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	960	ug/kg	
95-57-8	2-Chlorophenol	ND	190	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	ug/kg	
95-48-7	2-Methylphenol	ND	190	ug/kg	
	3&4-Methylphenol	ND	190	ug/kg	
88-75-5	2-Nitrophenol	ND	190	ug/kg	
100-02-7	4-Nitrophenol	ND	960	ug/kg	
87-86-5	Pentachlorophenol	ND	960	ug/kg	
108-95-2	Phenol	ND	190	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	ug/kg	
83-32-9	Acenaphthene	ND	190	ug/kg	
208-96-8	Acenaphthylene	ND	190	ug/kg	
120-12-7	Anthracene	ND	190	ug/kg	
56-55-3	Benzo(a)anthracene	ND	190	ug/kg	
50-32-8	Benzo(a)pyrene	ND	190	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	190	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	190	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	190	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	190	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	ug/kg	
106-47-8	4-Chloroaniline	ND	190	ug/kg	
86-74-8	Carbazole	ND	190	ug/kg	
218-01-9	Chrysene	ND	190	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-28-4	Date Sampled:	02/05/02
Lab Sample ID:	T2280-1	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	SW846 8270C SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	190	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	190	ug/kg	
132-64-9	Dibenzofuran	ND	190	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	190	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	190	ug/kg	
84-66-2	Diethyl phthalate	ND	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	190	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	190	ug/kg	
206-44-0	Fluoranthene	ND	190	ug/kg	
86-73-7	Fluorene	ND	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	ug/kg	
67-72-1	Hexachloroethane	ND	190	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	190	ug/kg	
78-59-1	Isophorone	ND	190	ug/kg	
91-57-6	2-Methylnaphthalene	ND	190	ug/kg	
88-74-4	2-Nitroaniline	ND	960	ug/kg	
99-09-2	3-Nitroaniline	ND	960	ug/kg	
100-01-6	4-Nitroaniline	ND	960	ug/kg	
91-20-3	Naphthalene	ND	190	ug/kg	
98-95-3	Nitrobenzene	ND	190	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	ug/kg	
85-01-8	Phenanthrene	ND	190	ug/kg	
129-00-0	Pyrene	ND	190	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		36-129%
4165-62-2	Phenol-d5	103%		38-135%
118-79-6	2,4,6-Tribromophenol	92%		37-144%
4165-60-0	Nitrobenzene-d5	85%		36-135%
321-60-8	2-Fluorobiphenyl	84%		44-135%
1718-51-0	Terphenyl-d14	93%		42-149%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-28-4	Date Sampled:	02/05/02
Lab Sample ID:	T2280-1	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	86.9
Method:	SW846 8151 SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD10864.D	1	02/17/02	JH	02/11/02	OP762	GDD302
Run #2							

Herbicide List

CAS No.	Compound	Result	RL	Units	Q
94-75-7	2,4-D	ND	38	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	7.6	ug/kg	
93-76-5	2,4,5-T	ND	7.6	ug/kg	
1918-00-9	Dicamba	ND	7.6	ug/kg	
88-85-7	Dinoseb	ND	7.6	ug/kg	
75-99-0	Dalapon	ND	38	ug/kg	
120-36-5	Dichloroprop	ND	38	ug/kg	
94-82-6	2,4-DB	ND	76	ug/kg	
93-65-2	MCP	ND	1900	ug/kg	
94-74-6	MCPA	ND	1900	ug/kg	
87-86-5	Pentachlorophenol	ND	1.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	81%		10-150%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-28-4	Date Sampled: 02/05/02
Lab Sample ID: T2280-1	Date Received: 02/07/02
Matrix: SO - Soil	Percent Solids: 86.9
Method: SW846 8081A SW846 3550B	
Project: Army Corp of Engineers / Embrey Dam	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD10669.D	1	02/13/02	JH	02/08/02	OP751	GDD299
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	1.9	ug/kg	
319-84-6	alpha-BHC	ND	1.9	ug/kg	
319-85-7	beta-BHC	ND	1.9	ug/kg	
319-86-8	delta-BHC	ND	1.9	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	ug/kg	
60-57-1	Dieldrin	ND	3.8	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	ug/kg	
72-20-8	Endrin	ND	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	ug/kg	
959-98-8	Endosulfan-I	ND	3.8	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	ug/kg	
76-44-8	Heptachlor	ND	1.9	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	ug/kg	
72-43-5	Methoxychlor	ND	19	ug/kg	
8001-35-2	Toxaphene	ND	190	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	92%		45-134%
2051-24-3	Decachlorobiphenyl	90%		40-140%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-28-4							
Lab Sample ID: T2280-1				Date Sampled: 02/05/02			
Matrix: SO - Soil				Date Received: 02/07/02			
Method: SW846 8082 SW846 3550B				Percent Solids: 86.9			
Project: Army Corp of Engineers / Embrey Dam							

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD10580.D	1	02/09/02	JH	02/08/02	OP752	GDD297
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	19	ug/kg	
11104-28-2	Aroclor 1221	ND	19	ug/kg	
11141-16-5	Aroclor 1232	ND	19	ug/kg	
53469-21-9	Aroclor 1242	ND	19	ug/kg	
12672-29-6	Aroclor 1248	ND	19	ug/kg	
11097-69-1	Aroclor 1254	ND	19	ug/kg	
11096-82-5	Aroclor 1260 ^a	10.5	19	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		45-134%
2051-24-3	Decachlorobiphenyl	71%		40-140%

(a) All hits confirmed by dual column analysis.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis**Client Sample ID:** TP-28-4**Lab Sample ID:** T2280-1**Matrix:** SO - Soil**Date Sampled:** 02/05/02**Date Received:** 02/07/02**Percent Solids:** 86.9**Project:** Army Corp of Engineers / Embrey Dam**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	13900	11	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Antimony	< 0.57	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Arsenic	1.2	1.1	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Barium	99.5	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Beryllium	< 0.57	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Cadmium	< 0.57	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Calcium	1440	57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Chromium	12.8	1.7	mg/kg	1	02/12/02	02/15/02 JA	SW846 6010B	SW846 3050B
Cobalt	5.5	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Copper	22.8	1.1	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Iron	16400	17	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Lead	4.8	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Magnesium	4190	57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Manganese	242	1.7	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Mercury	< 0.068	0.068	mg/kg	1	02/11/02	02/13/02 JA	SW846 7471A	SW846 7471A
Nickel	3.8	2.3	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Potassium	3570	57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Selenium	< 0.57	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Silver	< 1.1	1.1	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Sodium	59.8	57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Thallium	< 0.57	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Vanadium	38.6	0.57	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Zinc	40.9	1.1	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8260B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B101875.D	1	02/19/02	BC	n/a	n/a	VB258
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	63	ug/kg	
71-43-2	Benzene	ND	6.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.3	ug/kg	
75-25-2	Bromoform	ND	6.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.3	ug/kg	
75-00-3	Chloroethane	ND	6.3	ug/kg	
67-66-3	Chloroform	ND	6.3	ug/kg	
75-15-0	Carbon disulfide	ND	13	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.3	ug/kg	
124-48-1	Dibromochloromethane	ND	6.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.3	ug/kg	
591-78-6	2-Hexanone	ND	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	13	ug/kg	
74-83-9	Methyl bromide	ND	6.3	ug/kg	
74-87-3	Methyl chloride	ND	6.3	ug/kg	
75-09-2	Methylene chloride	ND	13	ug/kg	
78-93-3	Methyl ethyl ketone	ND	13	ug/kg	
100-42-5	Styrene	ND	6.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.3	ug/kg	
108-88-3	Toluene	ND	6.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.3	ug/kg	
75-01-4	Vinyl chloride	ND	6.3	ug/kg	
1330-20-7	Xylene (total)	ND	19	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8260B		
Project:	Army Corp of Engineers / Embrey Dam		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
2037-26-5	Toluene-D8	100%		81-117%
460-00-4	4-Bromofluorobenzene	97%		74-121%
17060-07-0	1,2-Dichloroethane-D4	95%		80-120%

ND = Not detected

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E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8270C SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H02070.D	1	02/11/02	SC	02/08/02	OP754	EH139
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	1000	ug/kg	
95-57-8	2-Chlorophenol	ND	210	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	ug/kg	
95-48-7	2-Methylphenol	ND	210	ug/kg	
	3&4-Methylphenol	ND	210	ug/kg	
88-75-5	2-Nitrophenol	ND	210	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	ug/kg	
108-95-2	Phenol	ND	210	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	ug/kg	
83-32-9	Acenaphthene	ND	210	ug/kg	
208-96-8	Acenaphthylene	ND	210	ug/kg	
120-12-7	Anthracene	ND	210	ug/kg	
56-55-3	Benzo(a)anthracene	ND	210	ug/kg	
50-32-8	Benzo(a)pyrene	ND	210	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	210	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	210	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	210	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	210	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	210	ug/kg	
100-51-6	Benzyl Alcohol	ND	210	ug/kg	
91-58-7	2-Chloronaphthalene	ND	210	ug/kg	
106-47-8	4-Chloroaniline	ND	210	ug/kg	
86-74-8	Carbazole	ND	210	ug/kg	
218-01-9	Chrysene	ND	210	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	210	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	210	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	210	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	210	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8270C SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

ABN TCL List

CAS No.	Compound	Result	RL	Units Q
106-46-7	1,4-Dichlorobenzene	ND	210	ug/kg
121-14-2	2,4-Dinitrotoluene	ND	210	ug/kg
606-20-2	2,6-Dinitrotoluene	ND	210	ug/kg
91-94-1	3,3'-Dichlorobenzidine	ND	420	ug/kg
53-70-3	Dibenzo(a,h)anthracene	ND	210	ug/kg
132-64-9	Dibenzofuran	ND	210	ug/kg
84-74-2	Di-n-butyl phthalate	ND	210	ug/kg
117-84-0	Di-n-octyl phthalate	ND	210	ug/kg
84-66-2	Diethyl phthalate	ND	210	ug/kg
131-11-3	Dimethyl phthalate	ND	210	ug/kg
117-81-7	bis(2-Ethylhexyl)phthalate	ND	210	ug/kg
206-44-0	Fluoranthene	ND	210	ug/kg
86-73-7	Fluorene	ND	210	ug/kg
118-74-1	Hexachlorobenzene	ND	210	ug/kg
87-68-3	Hexachlorobutadiene	ND	210	ug/kg
77-47-4	Hexachlorocyclopentadiene	ND	210	ug/kg
67-72-1	Hexachloroethane	ND	210	ug/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	210	ug/kg
78-59-1	Isophorone	ND	210	ug/kg
91-57-6	2-Methylnaphthalene	ND	210	ug/kg
88-74-4	2-Nitroaniline	ND	1000	ug/kg
99-09-2	3-Nitroaniline	ND	1000	ug/kg
100-01-6	4-Nitroaniline	ND	1000	ug/kg
91-20-3	Naphthalene	ND	210	ug/kg
98-95-3	Nitrobenzene	ND	210	ug/kg
621-64-7	N-Nitroso-di-n-propylamine	ND	210	ug/kg
86-30-6	N-Nitrosodiphenylamine	ND	210	ug/kg
85-01-8	Phenanthrene	ND	210	ug/kg
129-00-0	Pyrene	ND	210	ug/kg
120-82-1	1,2,4-Trichlorobenzene	ND	210	ug/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		36-129%
4165-62-2	Phenol-d5	84%		38-135%
118-79-6	2,4,6-Tribromophenol	108%		37-144%
4165-60-0	Nitrobenzene-d5	74%		36-135%
321-60-8	2-Fluorobiphenyl	88%		44-135%
1718-51-0	Terphenyl-d14	101%		42-149%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-31-6							
Lab Sample ID: T2280-2				Date Sampled: 02/05/02			
Matrix: SO - Soil				Date Received: 02/07/02			
Method: SW846 8151 SW846 3550B				Percent Solids: 79.8			
Project: Army Corp of Engineers / Embrey Dam							

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD10867.D	1	02/17/02	JH	02/11/02	OP762	GDD302
Run #2							

Herbicide List

CAS No.	Compound	Result	RL	Units	Q
94-75-7	2,4-D	ND	42	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	8.4	ug/kg	
93-76-5	2,4,5-T	ND	8.4	ug/kg	
1918-00-9	Dicamba	ND	8.4	ug/kg	
88-85-7	Dinoseb	ND	8.4	ug/kg	
75-99-0	Dalapon	ND	42	ug/kg	
120-36-5	Dichloroprop	ND	42	ug/kg	
94-82-6	2,4-DB	ND	84	ug/kg	
93-65-2	MCP	ND	2100	ug/kg	
94-74-6	MCPA	ND	2100	ug/kg	
87-86-5	Pentachlorophenol	ND	2.1	ug/kg	
1918-02-1	Picloram	ND	8.4	ug/kg	
100-02-7	4-Nitrophenol	ND	42	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	61%		10-150%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8081A SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	DD10670.D	10	02/13/02	JH	02/08/02	OP751	GDD299
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	21	ug/kg	
319-84-6	alpha-BHC	ND	21	ug/kg	
319-85-7	beta-BHC	ND	21	ug/kg	
319-86-8	delta-BHC	ND	21	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	21	ug/kg	
5103-71-9	alpha-Chlordane	ND	21	ug/kg	
5103-74-2	gamma-Chlordane	ND	21	ug/kg	
60-57-1	Dieldrin	ND	42	ug/kg	
72-54-8	4,4'-DDD	ND	42	ug/kg	
72-55-9	4,4'-DDE	ND	42	ug/kg	
50-29-3	4,4'-DDT	ND	42	ug/kg	
72-20-8	Endrin	ND	42	ug/kg	
1031-07-8	Endosulfan sulfate	ND	42	ug/kg	
7421-93-4	Endrin aldehyde	ND	42	ug/kg	
53494-70-5	Endrin ketone	ND	42	ug/kg	
959-98-8	Endosulfan-I	ND	42	ug/kg	
33213-65-9	Endosulfan-II	ND	42	ug/kg	
76-44-8	Heptachlor	ND	21	ug/kg	
1024-57-3	Heptachlor epoxide	ND	21	ug/kg	
72-43-5	Methoxychlor	ND	210	ug/kg	
8001-35-2	Toxaphene	ND	2100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	95%		45-134%
2051-24-3	Decachlorobiphenyl	98%		40-140%

(a) Dilution required due to interference from PCBs.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-31-6	Date Sampled:	02/05/02
Lab Sample ID:	T2280-2	Date Received:	02/07/02
Matrix:	SO - Soil	Percent Solids:	79.8
Method:	SW846 8082 SW846 3550B		
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD10581.D	1	02/09/02	JH	02/08/02	OP752	GDD297
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	21	ug/kg	
11104-28-2	Aroclor 1221	ND	21	ug/kg	
11141-16-5	Aroclor 1232	ND	21	ug/kg	
53469-21-9	Aroclor 1242	ND	21	ug/kg	
12672-29-6	Aroclor 1248	ND	21	ug/kg	
11097-69-1	Aroclor 1254	ND	21	ug/kg	
11096-82-5	Aroclor 1260 ^a	172	21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		45-134%
2051-24-3	Decachlorobiphenyl	62%		40-140%

(a) All hits confirmed by dual column analysis.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis**Client Sample ID:** TP-31-6**Lab Sample ID:** T2280-2**Matrix:** SO - Soil**Date Sampled:** 02/05/02**Date Received:** 02/07/02**Percent Solids:** 79.8**Project:** Army Corp of Engineers / Embrey Dam**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	15400	12	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Antimony	< 0.62	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Arsenic	< 1.2	1.2	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Barium	107	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Beryllium	< 0.62	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Cadmium	0.95	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Calcium	1970	62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Chromium	19.6	1.9	mg/kg	1	02/12/02	02/15/02 JA	SW846 6010B	SW846 3050B
Cobalt	6.7	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Copper	30.8	1.2	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Iron	18600	19	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Lead	37.2	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Magnesium	4350	62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Manganese	313	1.9	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Mercury	< 0.078	0.078	mg/kg	1	02/11/02	02/13/02 JA	SW846 7471A	SW846 7471A
Nickel	6.2	2.5	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Potassium	3040	62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Selenium	< 0.62	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Silver	< 1.2	1.2	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Sodium	82.4	62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Thallium	< 0.62	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Vanadium	39.1	0.62	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B
Zinc	203	1.2	mg/kg	1	02/12/02	02/14/02 JA	SW846 6010B	SW846 3050B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DS-1		
Lab Sample ID:	T2280-3	Date Sampled:	02/05/02
Matrix:	SO - Solid	Date Received:	02/07/02
Method:	TNRCC 1005	Percent Solids:	n/a
Project:	Army Corp of Engineers / Embrey Dam		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II00520.D	40	02/12/02	SC	02/11/02	OP763	GII28
Run #2 ^a	II00519.D	200	02/12/02	SC	02/11/02	OP763	GII28

CAS No.	Compound	Result	RL	Units	Q
	TPH (C6-C12)	ND	9400	mg/kg	
	TPH (> C12-C28)	167000	9400	mg/kg	
	TPH (> C28-C35)	170000 ^b	47000	mg/kg	
	TPH (C6-C35)	337000	19000	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^c	0% ^c	70-130%
98-08-8	aaa-Trifluorotoluene	0% ^c	0% ^c	70-130%

(a) Sample is a non-aqueous liquid. The sample was extracted as a solid using mass instead of volume.

(b) Result is from Run# 2

(c) Outside control limits due to dilution.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	DS-1	Date Sampled:	02/05/02
Lab Sample ID:	T2280-3	Date Received:	02/07/02
Matrix:	SO - Solid	Percent Solids:	n/a
Project:	Army Corp of Engineers / Embrey Dam		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Ignitability (Flashpoint)	> 210		Deg. F	1	02/08/02 JA	SW846 1010

RL = Reporting Limit

Report of Analysis**Client Sample ID:** TP-28-4**Lab Sample ID:** T2280-1A**Matrix:** SO - Soil**Date Sampled:** 02/05/02**Date Received:** 02/07/02**Percent Solids:** 86.9**Project:** Army Corp of Engineers / Embrey Dam**Metals Analysis, TCLP Leachate SW846 1311**

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.10	D004	5.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Barium	1.1	D005	100	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Cadmium	< 0.040	D006	1.0	0.040	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Chromium	< 0.60	D007	5.0	0.60	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Lead	< 0.10	D008	5.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Mercury	< 0.0020	D009	0.20	0.0020	mg/l	1	02/14/02	02/15/02 JA	SW846 7470A	SW846 7470A
Selenium	< 0.10	D010	1.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Silver	< 0.050	D011	5.0	0.050	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A

RL = Reporting Limit

MCL = Maximum Contamination Level (40 CFR 261.6/96)

Report of Analysis**Client Sample ID:** TP-31-6**Lab Sample ID:** T2280-2A**Matrix:** SO - Soil**Date Sampled:** 02/05/02**Date Received:** 02/07/02**Percent Solids:** 79.8**Project:** Army Corp of Engineers / Embrey Dam**Metals Analysis, TCLP Leachate SW846 1311**

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.10	D004	5.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Barium	0.82	D005	100	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Cadmium	< 0.040	D006	1.0	0.040	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Chromium	< 0.60	D007	5.0	0.60	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Lead	< 0.10	D008	5.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Mercury	< 0.0020	D009	0.20	0.0020	mg/l	1	02/14/02	02/15/02 JA	SW846 7470A	SW846 7470A
Selenium	< 0.10	D010	1.0	0.10	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A
Silver	< 0.050	D011	5.0	0.050	mg/l	10	02/14/02	02/15/02 JA	SW846 6010B	SW846 3010A

RL = Reporting Limit

MCL = Maximum Contamination Level (40 CFR 261.6/96)

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APPENDIX E:
EPA Region III RBC Table

Sources: EPA Region III RBC Table 4-12/1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
**ACETALDEHYDE	75070			2.57E-03 I	7.7E-03 I	y	1.6E+00 C	8.1E-01 C			
ACETOCHLOR	34256821	2E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
**ACETONE	67641	1.00E-01 I				y	6.1E+02 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
**ACETONITRILE	75058			1.7E-02 I		y	1.2E+02 N	6.2E+01 N			
ACETOPHENONE	98862	1.00E-01 I		5.70E-06 W		y	4.2E-02 N	2.1E-02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
ACROLEIN	107028	2.00E-02 H		5.70E-06 I		y	4.2E-02 N	2.1E-02 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
ACRYLAMIDE	79061	2.00E-04 I	4.50E+00 I		4.50E+00 I		1.5E-02 C	1.4E-03 C	7.0E-04 C	1.3E+00 C	1.4E-01 C
**ACRYLONITRILE	107131	1.00E-03 H	5.40E-01 I	5.70E-04 I	2.40E-01 I	y	3.7E-02 C	2.6E-02 C	5.8E-03 C	1.1E+01 C	1.2E+00 C
ALACHLOR	15972608	1.00E-02 I	8.00E-02 H				8.4E-01 C	7.8E-02 C	3.9E-02 C	7.2E+01 C	8.0E+00 C
ALAR	1596845	1.50E-01 I					5.5E+03 N	5.5E+02 N	2.0E+02 N	3.1E+05 N	1.2E+04 N
ALDICARB	116063	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
ALDICARB SULFONE	1646884	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
ALDRIN	309002	3.00E-05 I	1.70E+01 I		1.70E+01 I		3.9E-03 C	3.7E-04 C	1.9E-04 C	3.4E-01 C	3.8E-02 C
ALUMINUM	7429905	1.00E+00 E		1.00E-03 E			3.7E+04 N	3.7E+00 N	1.4E+03 N	2.0E+06 N	7.8E+04 N
AMINODINITROTOLUENES		6.00E-05 E					2.2E+00 N	2.2E-01 N	8.1E-02 N	1.2E+02 N	4.7E+00 N
4-AMINOPYRIDINE	504245	2.00E-05 H					7.3E-01 N	7.3E-02 N	2.7E-02 N	4.1E+01 N	1.6E+00 N
AMMONIA	7664417			2.86E-02 I		y	2.1E+02 N	1.0E+02 N			
**ANILINE	62533	7.00E-03 E	5.70E-03 I	2.90E-04 I			1.2E+01 C	1.1E+00 N	5.5E-01 C	1.0E+03 C	1.1E+02 C I
ANTIMONY	7440360	4.00E-04 I					1.5E+01 N	1.5E+00 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
ANTIMONY PENTOXIDE	1314609	5.00E-04 H					1.8E+01 N	1.8E+00 N	6.8E-01 N	1.0E+03 N	3.9E+01 N
ANTIMONY TETROXIDE	1332816	4.00E-04 H					1.5E+01 N	1.5E+00 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
ANTIMONY TRIOXIDE	1309644	4.00E-04 H		5.70E-05 I			1.5E+01 N	2.1E-01 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
ARSENIC	7440382	3.00E-04 I	1.50E+00 I		1.51E+01 I		4.5E-02 C	4.1E-04 C	2.1E-03 C	3.8E+00 C	4.3E-01 C
ARSINE	7784421			1.40E-05 I		y	1.0E-01 N	5.1E-02 N			
ASSURE	76578148	9.00E-03 I					3.3E+02 N	3.3E+01 N	1.2E+01 N	1.8E+04 N	7.0E+02 N
ATRAZINE	1912249	3.50E-02 I	2.20E-01 H				3.0E-01 C	2.8E-02 C	1.4E-02 C	2.6E+01 C	2.9E+00 C
AZOBENZENE	103333		1.10E-01 I		1.10E-01 I		6.1E-01 C	5.7E-02 C	2.9E-02 C	5.2E+01 C	5.8E+00 C
BARIUM	7440393	7.00E-02 I		1.40E-04 A			2.6E+03 N	5.1E-01 N	9.5E+01 N	1.4E+05 N	5.5E+03 N
BAYGON	114261	4.00E-03 I					1.5E+02 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
BAYTHROID	68359375	2.50E-02 I					9.1E+02 N	9.1E+01 N	3.4E+01 N	5.1E+04 N	2.0E+03 N
BENTAZON	25057890	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
BENZALDEHYDE	100527	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
BENZENE	71432	3.00E-03 E	2.90E-02 I	1.70E-03 E	2.90E-02 I	y	3.6E-01 C	2.2E-01 C	1.1E-01 C	2.0E+02 C	2.2E+01 C
BENZENETHIOL	108985	1.00E-05 H				y	6.1E-02 N	3.7E-02 N	1.4E-02 N	2.0E+01 N	7.8E-01 N
BENZIDINE	92875	3.00E-03 I	2.30E+02 I		2.30E+02 I		2.9E-04 C	2.7E-05 C	1.4E-05 C	2.5E-02 C	2.8E-03 C
BENZOIC ACID	65850	4.00E+00 I					1.5E+05 N	1.5E+04 N	5.4E+03 N	8.2E+06 N	3.1E+05 N
BENZYL ALCOHOL	100516	3.00E-01 H					1.1E+04 N	1.1E+03 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
BENZYL CHLORIDE	100447		0.17 I			y	6.2E-02 C	3.7E-02 C	1.9E-02 C	3.4E+01 C	3.8E+00 C
BERYLLIUM	7440417	2.00E-03 I		5.7E-06 I	8.40E+00 I		7.3E+01 N	7.5E-04 C	2.7E+00 N	4.1E+03 N	1.6E+02 N
BIPHENYL	92524	5.00E-02 I				y	3.0E+02 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
**BIS(2-CHLOROETHYL)ETHER	111444		1.10E+00 I		1.10E+00 I	y	9.6E-03 C	5.7E-03 C	2.9E-03 C	5.2E+00 C	5.8E-01 C
BIS(2-CHLOROISOPROPYL)ETHER	108601	4.00E-02 I	7.00E-02 H		3.50E-02 H	y	2.6E-01 C	1.8E-01 C	4.5E-02 C	8.2E+01 C	9.1E+00 C
BIS(CHLOROMETHYL)ETHER	542881		2.20E+02 I		2.20E+02 I	y	4.8E-05 C	2.8E-05 C	1.4E-05 C	2.6E-02 C	2.9E-03 C
BIS(2-ETHYLHEXYL)PHTHALATE	117817	2.00E-02 I	1.40E-02 I		1.40E-02 E		4.8E+00 C	4.5E-01 C	2.3E-01 C	4.1E+02 C	4.6E+01 C
BORON	7440428	9.00E-02 I		5.70E-03 H			3.3E+03 N	2.1E+01 N	1.2E+02 N	1.8E+05 N	7.0E+03 N
BROMODICHLOROMETHANE	75274	2.00E-02 I	6.20E-02 I			y	1.7E-01 C	1.0E-01 C	5.1E-02 C	9.2E+01 C	1.0E+01 C
BROMOETHENE	593602			8.6E-04 I	1.10E-01 H	y	1.1E-01 C	5.7E-02 C			
**BROMOFORM	75252	2.00E-02 I	7.90E-03 I		3.90E-03 I		8.5E+00 C	1.6E+00 C	4.0E-01 C	7.2E+02 C	8.1E+01 C
BROMOMETHANE	74839	1.40E-03 I		1.40E-03 I		y	8.5E+00 N	5.1E+00 N	1.9E+00 N	2.9E+03 N	1.1E+02 N
**BROMOPHOS	2104963	5.00E-03 H					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
1,3-BUTADIENE	106990				1.80E+00 H	y	7.0E-03 C	3.5E-03 C			
1-BUTANOL	71363	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
BUTYLBENZYLPHTHALATE	85687	2.00E-01 I					7.3E+03 N	7.3E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
BUTYLATE	2008415	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
N-BUTYLBENZENE	104518	1.00E-02 E				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
SEC-BUTYLBENZENE	135988	1.00E-02 E				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
TERT-BUTYLBENZENE	98066	1.00E-02 E				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
CADMIUM-WATER	7440439	5.00E-04 I			6.30E+00 I		1.8E+01 N	9.9E-04 C	6.8E-01 N	1.0E+03 N	3.9E+01 N
CADMIUM-FOOD	7440439	1.00E-03 I			6.30E+00 I		3.7E+01 N	9.9E-04 C	1.4E+00 N	2.0E+03 N	7.8E+01 N
CAPROLACTAM	105602	5.00E-01 I					1.8E+04 N	1.8E+03 N	6.8E+02 N	1.0E+06 N	3.9E+04 N

EPA Region III RBC Table 4-12/1999 Sources: EPA Regional III RBC Table 4-12/1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
CARBARYL	63252	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
CARBON DISULFIDE	75150	1.00E-01 I		2.00E-01 I		y	1.0E+03 N	7.3E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
CARBON TETRACHLORIDE	56235	7.00E-04 I	1.30E-01 I	5.71E-04 E	5.30E-02 I	y	1.6E-01 C	1.2E-01 C	2.4E-02 C	4.4E+01 C	4.9E+00 C
CARBOSULFAN	55285148	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
**CHLORAL	75876	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
CHLORANIL	118752		4.00E-01 H				1.7E-01 C	1.6E-02 C	7.9E-03 C	1.4E+01 C	1.6E+00 C
CHLORDANE	57749	5.00E-04 I	3.5E-01 I	2.00E-04 I	3.5E-01 I		1.9E-01 C	1.8E-02 C	9.0E-03 C	1.6E+01 C	1.8E+00 C
CHLORINE	7782505	1.00E-01 I				y	6.1E+02 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
CHLORINE DIOXIDE	10049044			5.70E-05 I		y	4.2E-01 N	2.1E-01 N			
CHLOROACETIC ACID	79118	2.00E-03 H					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
4-CHLOROANILINE	106478	4.00E-03 I					1.5E+02 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
**CHLOROBENZENE	108907	2.00E-02 I		1.7E-02 E		y	1.1E+02 N	6.2E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
CHLOROBENZILATE	510156	2.00E-02 I	2.70E-01 H		2.70E-01 H		2.5E-01 C	2.3E-02 C	1.2E-02 C	2.1E+01 C	2.4E+00 C
P-CHLOROBENZOIC ACID	74113	2.00E-01 H					7.3E+03 N	7.3E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
2-CHLORO-1,3-BUTADIENE	126998	2.00E-02 A		2.00E-03 H		y	1.4E+01 N	7.3E+00 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
1-CHLOROBUTANE	109693	4.00E-01 H				y	2.4E+03 N	1.5E+03 N	5.4E+02 N	8.2E+05 N	3.1E+04 N
1-CHLORO-1,1-DIFLUOROETHANE	75683			1.40E+01 I		y	1.0E+05 N	5.1E+04 N			
CHLORODIFLUOROMETHANE	75456			1.40E+01 I		y	1.0E+05 N	5.1E+04 N			
CHLOROETHANE	75003	4.00E-01 E	2.90E-03 E	2.90E+00 I		y	3.6E+00 C	2.2E+00 C	1.1E+00 C	2.0E+03 C	2.2E+02 C
CHLOROFORM	67663	1.00E-02 I	6.10E-03 I	8.6E-05 E	8.10E-02 I	y	1.5E-01 C	7.7E-02 C	5.2E-01 C	9.4E+02 C	1.0E+02 C
**CHLOROMETHANE	74873		1.30E-02 H	8.6E-02 E	3.5E-03 E	y	2.1E+00 C	1.8E+00 C	2.4E-01 C	4.4E+02 C	4.9E+01 C
4-CHLORO-2-METHYLANILINE	95692		5.80E-01 H				1.2E-01 C	1.1E-02 C	5.4E-03 C	9.9E+00 C	1.1E+00 C
BETA-CHLORONAPHTHALENE	91587	8.00E-02 I				y	4.9E+02 N	2.9E+02 N	1.1E+02 N	1.6E+05 N	6.3E+03 N
O-CHLORONITROBENZENE	88733		2.50E-02 H			y	4.2E-01 C	2.5E-01 C	1.3E-01 C	2.3E+02 C	2.6E+01 C
P-CHLORONITROBENZENE	100005		1.80E-02 H			y	5.9E-01 C	3.5E-01 C	1.8E-01 C	3.2E+02 C	3.5E+01 C
**2-CHLOROPHENOL	95578	5.00E-03 I				y	3.0E+01 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
2-CHLOROPROPANE	75296			2.90E-02 H		y	2.1E+02 N	1.1E+02 N			
O-CHLOROTOLUENE	95498	2.00E-02 I				y	1.2E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
CHLOROPYRIFOS	2921882	3.00E-03 I					1.1E+02 N	1.1E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
CHLOROPYRIFOS-METHYL	5598130	1.00E-02 H					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
CHROMIUM III	16065831	1.50E+00 I					5.5E+04 N	5.5E+03 N	2.0E+03 N	3.1E+06 N	1.2E+05 N
CHROMIUM VI	18540299	3.00E-03 I		3.00E-05 I	4.10E+01 H		1.1E+02 N	1.5E-04 C	4.1E+00 N	6.1E+03 N	2.3E+02 N
COBALT	7440484	6.00E-02 E					2.2E+03 N	2.2E+02 N	8.1E+01 N	1.2E+05 N	4.7E+03 N
**COKE OVEN EMISSIONS (COAL TAR)	8007452				2.2 I			2.8E-03 C			
COPPER	7440508	4.00E-02 H					1.5E+03 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
**CROTONALDEHYDE	123739		1.90E+00 H			y	5.6E-03 C	3.3E-03 C	1.7E-03 C	3.0E+00 C	3.4E-01 C
CUMENE	98828	1.00E-01 I		1.10E-01 I		y	6.6E+02 N	4.0E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
CYANIDE (FREE)	57125	2.00E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
CALCIUM CYANIDE	592018	4E-02 I					1.5E+03 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
COPPER CYANIDE	544923	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
CYANAZINE	21725462	2.00E-03 H	8.40E-01 H				8.0E-02 C	7.5E-03 C	3.8E-03 C	6.8E+00 C	7.6E-01 C
CYANOGEN	460195	4.00E-02 I				y	2.4E+02 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
CYANOGEN BROMIDE	506683	9.00E-02 I					3.3E+03 N	3.3E+02 N	1.2E+02 N	1.8E+05 N	7.0E+03 N
CYANOGEN CHLORIDE	506774	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
HYDROGEN CYANIDE	74908	2.00E-02 I		8.60E-04 I		y	6.2E+00 N	3.1E+00 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
POTASSIUM CYANIDE	151508	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
POTASSIUM SILVER CYANIDE	506616	2.00E-01 I					7.3E+03 N	7.3E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
SILVER CYANIDE	506649	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
SODIUM CYANIDE	143339	4.00E-02 I					1.5E+03 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
THIOCYANATE		1.00E-01 E					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
ZINC CYANIDE	557211	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
CYCLOHEXANONE	108941	5.00E+00 I					1.8E+05 N	1.8E+04 N	6.8E+03 N	1.0E+07 N	3.9E+05 N
CYHALOTHRIN/KARATE	68085858	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
CYPERMETHRIN	52315078	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
DACTHAL	1861321	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
DALAPON	75990	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
DDD	72548		2.40E-01 I				2.8E-01 C	2.6E-02 C	1.3E-02 C	2.4E+01 C	2.7E+00 C
DDE	72559		3.40E-01 I				2.0E-01 C	1.8E-02 C	9.3E-03 C	1.7E+01 C	1.9E+00 C
DDT	50293	5.00E-04 I	3.40E-01 I		3.40E-01 I		2.0E-01 C	1.8E-02 C	9.3E-03 C	1.7E+01 C	1.9E+00 C
DIAZINON	333415	9.00E-04 H					3.3E+01 N	3.3E+00 N	1.2E+00 N	1.8E+03 N	7.0E+01 N

EPA Region III RBC Table 4-12-1999 Sources: EPA Regional Office, EPA Table 4-12-1999, EPA Table 4-12-1999, EPA Table 4-12-1999, EPA Table 4-12-1999, EPA Table 4-12-1999, EPA Table 4-12-1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
DIBENZOFURAN	132649	4.00E-03 E				y	2.4E+01 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
**1,4-DIBROMOBENZENE	106376	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
DIBROMOCHLOROMETHANE	124481	2.00E-02 I	8.40E-02 I			y	1.3E-01 C	7.5E-02 C	3.8E-02 C	6.8E+01 C	7.6E+00 C
1,2-DIBROMO-3-CHLOROPROPANE	96128		1.40E+00 H	5.70E-05 I	2.40E-03 H	y	4.7E-02 C	2.1E-01 N	2.3E-03 C	4.1E+00 C	4.6E-01 C
1,2-DIBROMOETHANE	106934		8.50E+01 I	5.70E-05 H	7.60E-01 I	y	7.5E-04 C	8.2E-03 C	3.7E-05 C	6.7E-02 C	7.5E-03 C
DIBUTYLPHTHALATE	84742	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
DICAMBA	1918009	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
1,2-DICHLOROENZENE	95501	9.00E-02 I		9.00E-03 E		y	6.4E+01 N	3.3E+01 N	1.2E+02 N	1.8E+05 N	7.0E+03 N
**1,3-DICHLOROENZENE	541731	9.00E-04 E				y	5.5E+00 N	3.3E+00 N	1.2E+00 N	1.8E+03 N	7.0E+01 N
1,4-DICHLOROENZENE	106467	3.00E-02 E	2.40E-02 H	2.29E-01 I	2.2E-02 E	y	4.7E-01 C	2.8E-01 C	1.3E-01 C	2.4E+02 C	2.7E+01 C
3,3'-DICHLOROBENZIDINE	91941		4.50E-01 I				1.5E-01 C	1.4E-02 C	7.0E-03 C	1.3E+01 C	1.4E+00 C
1,4-DICHLORO-2-BUTENE	764410				9.30E+00 H	y	1.3E-03 C	6.7E-04 C			
DICHLORODIFLUOROMETHANE	75718	2.00E-01 I		5.00E-02 A		y	3.5E+02 N	1.8E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
1,1-DICHLOROETHANE	75343	1.00E-01 H		1.40E-01 A		y	8.0E+02 N	5.1E+02 N	2.0E+05 N	7.8E+03 N	
1,2-DICHLOROETHANE	107062	3.00E-02 E	9.10E-02 I	1.40E-03 E	9.10E-02 I	y	1.2E-01 C	6.9E-02 C	3.5E-02 C	6.3E+01 C	7.0E+00 C
1,1-DICHLOROETHENE	75354	9.00E-03 I	6.00E-01 I		1.75E-01 I	y	4.4E-02 C	3.6E-02 C	5.3E-03 C	9.5E+00 C	1.1E+00 C
CIS-1,2-DICHLOROETHENE	156592	1.00E-02 H				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
TRANS-1,2-DICHLOROETHENE	156605	2.00E-02 I				y	1.2E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
TOTAL 1,2-DICHLOROETHENE	540590	9.00E-03 H				y	5.5E+01 N	3.3E+01 N	1.2E+01 N	1.8E+04 N	7.0E+02 N
2,4-DICHLOROPHENOL	120832	3.00E-03 I					1.1E+02 N	1.1E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
**2,4-D	94757	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94826	8E-03 I					2.9E+02 N	2.9E+01 N	1.1E+01 N	1.6E+04 N	6.3E+02 N
1,2-DICHLOROPROPANE	78875		6.80E-02 H	1.14E-03 I		y	1.6E-01 C	9.2E-02 C	4.6E-02 C	8.4E+01 C	9.4E+00 C
2,3-DICHLOROPROPANOL	616239	3.00E-03 I					1.1E+02 N	1.1E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
1,3-DICHLOROPROPENE	542756	3.00E-04 I	1.80E-01 H	5.71E-03 I	1.30E-01 H	y	7.7E-02 C	4.8E-02 C	1.8E-02 C	3.2E+01 C	3.5E+00 C
DICHLORVOS	62737	5E-04 I	0.29 I	1.43E-04 I			2.3E-01 C	2.2E-02 C	1.1E-02 C	2.0E+01 C	2.2E+00 C
DICOFOL	115322		4.4E-01 W				1.5E-01 C	1.4E-02 C	7.2E-03 C	1.3E+01 C	1.5E+00 C
DICYCLOPENTADIENE	77736	3E-02 H		6.00E-05 A		y	4.4E-01 N	2.2E-01 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
DIELDRIN	60571	5.00E-05 I	1.60E+01 I		1.60E+01 I		4.2E-03 C	3.9E-04 C	2.0E-04 C	3.6E-01 C	4.0E-02 C
DIESEL EMISSIONS				1.40E-03 I				5.1E+00 N			
DIETHYLPHTHALATE	84662	8.00E-01 I					2.9E+04 N	2.9E+03 N	1.1E+03 N	1.6E+06 N	6.3E+04 N
DIETHYLENE GLYCOL, MONOBUTYL ETHER	112345			5.70E-03 H				2.1E+01 N			
DIETHYLENE GLYCOL, MONOETHYL ETHER	111900	2.00E+00 H					7.3E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
DI(2-ETHYLHEXYL)ADIPATE	103231	6.00E-01 I	1.20E-03 I				5.6E+01 C	5.2E+00 C	2.6E+00 C	4.8E+03 C	5.3E+02 C
DIETHYLSTILBESTROL	56531		4.70E+03 H				1.4E-05 C	1.3E-06 C	6.7E-07 C	1.2E-03 C	1.4E-04 C
DIFENZOQUAT (AVENGE)	43222486	8.00E-02 I					2.9E+03 N	2.9E+02 N	1.1E+02 N	1.6E+05 N	6.3E+03 N
1,1-DIFLUOROETHANE	75376			1.10E+01 I		y	8.0E+04 N	4.0E+04 N			
DIISOPROPYL METHYLPHOSPHONATE (DIMP)	1445756	8.00E-02 I					2.9E+03 N	2.9E+02 N	1.1E+02 N	1.6E+05 N	6.3E+03 N
3,3'-DIMETHOXYBENZIDINE	119904		1.40E-02 H				4.8E+00 C	4.5E-01 C	2.3E-01 C	4.1E+02 C	4.6E+01 C
**DIMETHYLAMINE	124403			5.70E-06 W		y	4.2E-02 N	2.1E-02 N			
2,4-DIMETHYLANILINE HYDROCHLORIDE	21436964		5.80E-01 H				1.2E-01 C	1.1E-02 C	5.4E-03 C	9.9E+00 C	1.1E+00 C
2,4-DIMETHYLANILINE	95681		7.50E-01 H				8.9E-02 C	8.3E-03 C	4.2E-03 C	7.6E+00 C	8.5E-01 C
N,N-DIMETHYLANILINE	121697	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
3,3'-DIMETHYLBENZIDINE	119937		9.20E+00 H				7.3E-03 C	6.8E-04 C	3.4E-04 C	6.2E-01 C	6.9E-02 C
1,1-DIMETHYLHYDRAZINE	57147		2.60E+00 W		3.50E+00 W		2.6E-02 C	1.8E-03 C	1.2E-03 C	2.2E+00 C	2.5E-01 C
1,2-DIMETHYLHYDRAZINE	540738		3.70E+01 W		3.70E+01 W		1.8E-03 C	1.7E-04 C	8.5E-05 C	1.5E-01 C	1.7E-02 C
2,4-DIMETHYLPHENOL	105679	2.00E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
2,6-DIMETHYLPHENOL	576261	6.00E-04 I					2.2E+01 N	2.2E+00 N	8.1E-01 N	1.2E+03 N	4.7E+01 N
3,4-DIMETHYLPHENOL	95658	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
DIMETHYLPHTHALATE	131113	1.00E+01 W					3.7E+05 N	3.7E+04 N	1.4E+04 N	2.0E+07 N	7.8E+05 N
1,2-DINITROBENZENE	528290	4.00E-04 H					1.5E+01 N	1.5E+00 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
1,3-DINITROBENZENE	99650	1.00E-04 I					3.7E+00 N	3.7E-01 N	1.4E-01 N	2.0E+02 N	7.8E+00 N
1,4-DINITROBENZENE	100254	4.00E-04 H					1.5E+01 N	1.5E+00 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
4,6-DINITRO-O-CYCLOHEXYL PHENOL	131895	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
4,6-DINITRO-2-METHYLPHENOL	534521	1.00E-04 E					3.7E+00 N	3.7E-01 N	1.4E-01 N	2.0E+02 N	7.8E+00 N
2,4-DINITROPHENOL	51285	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
DINITROTOLUENE MIX			6.80E-01 I				9.8E-02 C	9.2E-03 C	4.6E-03 C	8.4E+00 C	9.4E-01 C
2,4-DINITROTOLUENE	121142	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
2,6-DINITROTOLUENE	606202	1.00E-03 H					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
**DINOSEB	88857	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N

Sources: EPA Region III RBC Table 4-12/1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
DIOCTYLPHTHALATE	117840	2.00E-02 H					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
1,4-DIOXANE	123911		1.10E-02 I				6.1E+00 C	5.7E-01 C	2.9E-01 C	5.2E+02 C	5.8E+01 C
DIPHENYLAMINE	122394	2.50E-02 I					9.1E+02 N	9.1E+01 N	3.4E+01 N	5.1E+04 N	2.0E+03 N
1,2-DIPHENYLHYDRAZINE	122667		8.00E-01 I		8.00E-01 I		8.4E-02 C	7.8E-03 C	3.9E-03 C	7.2E+00 C	8.0E-01 C
DIQUAT	85007	2.20E-03 I					8.0E+01 N	8.0E+00 N	3.0E+00 N	4.5E+03 N	1.7E+02 N
**DISULFOTON	298044	4.00E-05 I					1.5E+00 N	1.5E-01 N	5.4E-02 N	8.2E+01 N	3.1E+00 N
1,4-DITHIANE	505293	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
DIURON	330541	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
ENDOSULFAN	115297	6.00E-03 I					2.2E+02 N	2.2E+01 N	8.1E+00 N	1.2E+04 N	4.7E+02 N
ENDRIN	72208	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
**EPICHLOROHRIDIN	106898	2.00E-03 H	9.90E-03 I	2.86E-04 I	4.20E-03 I	y	2.0E+00 N	1.0E+00 N	3.2E-01 C !	5.8E+02 C !	6.5E+01 C !
ETHION	563122	5.00E-04 I					1.8E+01 N	1.8E+00 N	6.8E-01 N	1.0E+03 N	3.9E+01 N
2-ETHOXYETHANOL	110805	4.00E-01 H		5.70E-02 I			1.5E+04 N	2.1E+02 N	5.4E+02 N	8.2E+05 N	3.1E+04 N
ETHYL ACETATE	141786	9.00E-01 I				y	5.5E+03 N	3.3E+03 N	1.2E+03 N	1.8E+06 N	7.0E+04 N
ETHYLBENZENE	100414	1.00E-01 I		2.90E-01 I		y	1.3E+03 N	1.1E+03 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
ETHYLENE DIAMINE	107153	2.00E-02 H					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
ETHYLENE GLYCOL	107211	2.00E+00 I					7.3E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
ETHYLENE GLYCOL, MONOBUTYL ETHER	111762			5.70E-03 H				2.1E+01 N			
**ETHYLENE OXIDE	75218		1.00E+00 H		3.50E-01 H	y	2.3E-02 C	1.8E-02 C	3.2E-03 C	5.7E+00 C	6.4E-01 C
ETHYLENE THIOUREA	96457	8.00E-05 I	1.1E-01 H				6.1E-01 C !	5.7E-02 C !	2.9E-02 C !	5.2E+01 C !	5.8E+00 C !
ETHYL ETHER	60297	2.00E-01 I				y	1.2E+03 N	7.3E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
ETHYL METHACRYLATE	97632	9.00E-02 H				y	5.5E+02 N	3.3E+02 N	1.2E+02 N	1.8E+05 N	7.0E+03 N
FENAMIPHOS	22224926	2.50E-04 I					9.1E+00 N	9.1E-01 N	3.4E-01 N	5.1E+02 N	2.0E+01 N
FLUOMETURON	2164172	1.30E-02 I					4.7E+02 N	4.7E+01 N	1.8E+01 N	2.7E+04 N	1.0E+03 N
FLUORINE	7782414	6.00E-02 I					2.2E+03 N	2.2E+02 N	8.1E+01 N	1.2E+05 N	4.7E+03 N
FOMESAFEN	72178020		1.90E-01 I				3.5E-01 C	3.3E-02 C	1.7E-02 C	3.0E+01 C	3.4E+00 C
FONOFOS	944229	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
FORMALDEHYDE	50000	2.00E-01 I			4.50E-02 I		7.3E+03 N	1.4E-01 C	2.7E+02 N	4.1E+05 N	1.6E+04 N
FORMIC ACID	64186	2.00E+00 H					7.3E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
FURAN	110009	1.00E-03 I				y	6.1E+00 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
FURAZOLIDONE	67458		3.80E+00 H				1.8E-02 C	1.6E-03 C	8.3E-04 C	1.5E+00 C	1.7E-01 C
FURFURAL	98011	3.00E-03 I		1.00E-02 A			1.1E+02 N	3.7E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
GLYCIDALDEHYDE	765344	4.00E-04 I		2.90E-04 H			1.5E+01 N	1.1E+00 N	5.4E-01 N	8.2E+02 N	3.1E+01 N
GLYPHOSATE	1071836	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
**HEPTACHLOR	76448	5.00E-04 I	4.50E+00 I		4.50E+00 I		1.5E-02 C	1.4E-03 C	7.0E-04 C	1.3E+00 C	1.4E-01 C
**HEPTACHLOR EPOXIDE	1024573	1.30E-05 I	9.10E+00 I		9.10E+00 I		7.4E-03 C	6.9E-04 C	3.5E-04 C	6.3E-01 C	7.0E-02 C
HEXABROMOBENZENE	87821	2.00E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
**HEXACHLOROBENZENE	118741	8.00E-04 I	1.60E+00 I		1.60E+00 I		4.2E-02 C	3.9E-03 C	2.0E-03 C	3.6E+00 C	4.0E-01 C
**HEXACHLOROBUTADIENE	87683	2.00E-04 H	7.80E-02 I		7.80E-02 I		8.6E-01 C !	8.0E-02 C !	4.0E-02 C !	7.3E+01 C !	8.2E+00 C !
ALPHA-HCH	319846		6.30E+00 I		6.30E+00 I		1.1E-02 C	9.9E-04 C	5.0E-04 C	9.1E-01 C	1.0E-01 C
BETA-HCH	319857		1.80E+00 I		1.80E+00 I		3.7E-02 C	3.5E-03 C	1.8E-03 C	3.2E+00 C	3.5E-01 C
GAMMA-HCH (LINDANE)	58899	3.00E-04 I	1.30E+00 H				5.2E-02 C	4.8E-03 C	2.4E-03 C	4.4E+00 C	4.9E-01 C
TECHNICAL HCH	608731		1.80E+00 I		1.80E+00 I		3.7E-02 C	3.5E-03 C	1.8E-03 C	3.2E+00 C	3.5E-01 C
**HEXACHLOROCYCLOPENTADIENE	77474	7.00E-03 I		2.00E-05 H			2.6E+02 N	7.3E-02 N	9.5E+00 N	1.4E+04 N	5.5E+02 N
HEXACHLORODIBENZODIOXIN MIX	19408743		6.20E+03 I		4.55E+03 I		1.1E-05 C	1.4E-06 C	5.1E-07 C	9.2E-04 C	1.0E-04 C
**HEXACHLOROETHANE	67721	1.00E-03 I	1.40E-02 I		1.40E-02 I		4.8E+00 C !	4.5E-01 C !	2.3E-01 C !	4.1E+02 C !	4.6E+01 C !
HEXACHLOROPHENE	70304	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
1,6-HEXAMETHYLENE DIISOCYANATE	822060			2.90E-06 I				1.1E-02 N			
HEXANE	110543	6.00E-02 H		5.71E-02 I		y	3.5E+02 N	2.1E+02 N	8.1E+01 N	1.2E+05 N	4.7E+03 N
2-HEXANONE	591786	4.00E-02 E		1.4E-03 E			1.5E+03 N	5.1E+00 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
HEXAZINONE	51235042	3.30E-02 I					1.2E+03 N	1.2E+02 N	4.5E+01 N	6.7E+04 N	2.6E+03 N
HMX	2691410	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
HYDRAZINE	302012		3.00E+00 I		1.70E+01 I		2.2E-02 C	3.7E-04 C	1.1E-03 C	1.9E+00 C	2.1E-01 C
HYDROGEN CHLORIDE	7647010			5.70E-03 I				2.1E+01 N			
HYDROGEN SULFIDE	7783064	3.00E-03 I		2.85E-04 I			1.1E+02 N	1.0E+00 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
HYDROQUINONE	123319	4.00E-02 H					1.5E+03 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
IRON	7439896	3.00E-01 E					1.1E+04 N	1.1E+03 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
ISOBUTANOL	78831	3.00E-01 I				y	1.8E+03 N	1.1E+03 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
ISOPHORONE	78591	2.00E-01 I	9.50E-04 I				7.0E+01 C	6.6E+00 C	3.3E+00 C	6.0E+03 C	6.7E+02 C
ISOPROPALIN	33820530	1.50E-02 I					5.5E+02 N	5.5E+01 N	2.0E+01 N	3.1E+04 N	1.2E+03 N

EPA Region III RBC Table 4-12/1999							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c				
Sources: EPA Region III RBC Table 4-12/1999							Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
ISOPROPYL METHYL PHOSPHONIC ACID	1832548	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
**TETRAETHYLLEAD	78002	1.00E-07 I					3.7E-03 N	3.7E-04 N	1.4E-04 N	2.0E-01 N	7.8E-03 N
LITHIUM	7439932	2.00E-02 E					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
MALATHION	121755	2.00E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
MALEIC ANHYDRIDE	108316	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
MANGANESE-NONFOOD	7439965	2.00E-02 I		1.43E-05 I			7.3E+02 N	5.2E-02 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
MANGANESE-FOOD	7439965	1.40E-01 I		1.43E-05 I			5.1E+03 N	5.2E-02 N	1.9E+02 N	2.9E+05 N	1.1E+04 N
MEPHOSFOLAN	950107	9.00E-05 H					3.3E+00 N	3.3E-01 N	1.2E-01 N	1.8E+02 N	7.0E+00 N
MEPIQUAT CHLORIDE	24307264	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
MERCURIC CHLORIDE	7487947	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
MERCURY (INORGANIC)	7439976			8.60E-05 I				3.1E-01 N			
METHYLMERCURY	22967926	1.00E-04 I					3.7E+00 N	3.7E-01 N	1.4E-01 N	2.0E+02 N	7.8E+00 N
METHACRYLONITRILE	126987	1.00E-04 I		2.00E-04 A		y	1.0E+00 N	7.3E-01 N	1.4E-01 N	2.0E+02 N	7.8E+00 N
METHANOL	67561	5.00E-01 I					1.8E+04 N	1.8E+03 N	6.8E+02 N	1.0E+06 N	3.9E+04 N
METHIDATHION	950378	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
METHOXYCHLOR	72435	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
METHYL ACETATE	79209	1.00E+00 H				y	6.1E+03 N	3.7E+03 N	1.4E+03 N	2.0E+06 N	7.8E+04 N
METHYL ACRYLATE	96333	3.00E-02 A				y	1.8E+02 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
2-METHYLANILINE	95534		2.40E-01 H				2.8E-01 C	2.6E-02 C	1.3E-02 C	2.4E+01 C	2.7E+00 C
4-(2-METHYL-4-CHLOROPHENOXY) BUTYRIC ACID	94815	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
2-METHYL-4-CHLOROPHENOXYACETIC ACID (MCPA)	94746	5.00E-04 I					1.8E+01 N	1.8E+00 N	6.8E-01 N	1.0E+03 N	3.9E+01 N
2-(2-METHYL-4-CHLOROPHENOXY)PROPIONIC ACID (MCP)	93652	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
METHYLCYCLOHEXANE	108872			8.60E-01 H		y	6.3E+03 N	3.1E+03 N			
METHYLENE BROMIDE	74953	1.00E-02 A				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
METHYLENE CHLORIDE	75092	6.00E-02 I	7.50E-03 I	8.60E-01 H	1.65E-03 I	y	4.1E+00 C	3.8E+00 C	4.2E-01 C	7.6E+02 C	8.5E+01 C
4,4'-METHYLENE BIS(2-CHLOROANILINE)	101144	7.00E-04 H	1.30E-01 H		1.30E-01 H		5.2E-01 C	4.8E-02 C	2.4E-02 C	4.4E+01 C	4.9E+00 C
4,4'-METHYLENE BIS(N,N'-DIMETHYL)ANILINE	101611		4.60E-02 I				1.5E+00 C	1.4E-01 C	6.9E-02 C	1.2E+02 C	1.4E+01 C
4,4'-METHYLENEDIPHENYL ISOCYANATE	101688			1.7E-04 I				6.2E-01 N			
METHYL ETHYL KETONE (2-BUTANONE)	78933	6.00E-01 I		2.86E-01 I		y	1.9E+03 N	1.0E+03 N	8.1E+02 N	1.2E+06 N	4.7E+04 N
METHYL HYDRAZINE	60344		1.10E+00 W				6.1E-02 C	5.7E-03 C	2.9E-03 C	5.2E+00 C	5.8E-01 C
**METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108101	8.00E-02 H		2.00E-02 A		y	1.4E+02 N	7.3E+01 N	1.1E+02 N	1.6E+05 N	6.3E+03 N
METHYL METHACRYLATE	80626	1.40E+00 I		2.00E-01 I		y	1.4E+03 N	7.3E+02 N	1.9E+03 N	2.9E+06 N	1.1E+05 N
2-METHYL-5-NITROANILINE	99558		3.30E-02 H				2.0E+00 C	1.9E-01 C	9.6E-02 C	1.7E+02 C	1.9E+01 C
METHYL PARATHION	298000	2.50E-04 I					9.1E+00 N	9.1E-01 N	3.4E-01 N	5.1E+02 N	2.0E+01 N
2-METHYLPHENOL	95487	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
3-METHYLPHENOL	108394	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
4-METHYLPHENOL	106445	5.00E-03 H					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
METHYLSTYRENE MIX	25013154	6.00E-03 A		1.00E-02 A		y	5.5E+01 N	3.7E+01 N	8.1E+00 N	1.2E+04 N	4.7E+02 N
ALPHA-METHYLSTYRENE	98839	7.00E-02 A				y	4.3E+02 N	2.6E+02 N	9.5E+01 N	1.4E+05 N	5.5E+03 N
METHYL TERT-BUTYL ETHER	1634044			8.57E-01 I		y	6.3E+03 N	3.1E+03 N			
METOLACHLOR (DUAL)	51218452	1.50E-01 I					5.5E+03 N	5.5E+02 N	2.0E+02 N	3.1E+05 N	1.2E+04 N
**MIREX	2385855	2.00E-04 I					7.3E+00 N	7.3E-01 N	2.7E-01 N	4.1E+02 N	1.6E+01 N
MOLYBDENUM	7439987	5E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
**MONOCHLORAMINE	10599903	1E-01 I		1.00E-01 H			3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
NALED	300765	2E-03 I					7.3E+01 N	7.3E+00 N	2.7E+00 N	4.1E+03 N	1.6E+02 N
NICKEL REFINERY DUST					8.4E-01 I			7.5E-03 C			
NICKEL	7440020	2.00E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
NITRATE	14797558	1.60E+00 I					5.8E+04 N	5.8E+03 N	2.2E+03 N	3.3E+06 N	1.3E+05 N
NITRIC OXIDE	10102439	1.00E-01 W				y	6.1E+02 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
NITRITE	14797650	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
2-NITROANILINE	88744			5.70E-05 H				2.1E-01 N			
NITROBENZENE	98953	5.00E-04 I		6.00E-04 A		y	3.5E+00 N	2.2E+00 N	6.8E-01 N	1.0E+03 N	3.9E+01 N
NITROFURANTOIN	67209	7.00E-02 H					2.8E+03 N	2.6E+02 N	9.5E+01 N	1.4E+05 N	5.5E+03 N
NITROFURAZONE	59870		1.50E+00 H				4.5E-02 C	4.2E-03 C	2.1E-03 C	3.8E+00 C	4.3E-01 C
NITROGEN DIOXIDE	10102440	1.00E+00 W				y	6.1E+03 N	3.7E+03 N	1.4E+03 N	2.0E+06 N	7.8E+04 N
NITROGLYCERIN	55630		1.4E-02 E				4.8E+00 C	4.5E-01 C	2.3E-01 C	4.1E+02 C	4.6E+01 C
4-NITROPHENOL	100027	8.00E-03 E					2.9E+02 N	2.9E+01 N	1.1E+01 N	1.6E+04 N	6.3E+02 N
2-NITROPROPANE	79469			5.70E-03 I	9.40E+00 H	y	1.3E-03 C	6.7E-04 C			
**N-NITROSO-DI-N-BUTYLAMINE	924163		5.40E+00 I		5.60E+00 I	y	1.9E-03 C	1.1E-03 C	5.8E-04 C	1.1E+00 C	1.2E-01 C
N-NITROSODIETHANOLAMINE	1116547		2.80E+00 I				2.4E-02 C	2.2E-03 C	1.1E-03 C	2.0E+00 C	2.3E-01 C

EPA Region III RBC Table 4-12/1999-6							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c				
Sources: EPA Region III RBC Table 4-12/1999-6 drawn from IRIS or HEAST E = EPA-NCEA provisional value O = other							Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
N-NITROSODIETHYLAMINE	55185		1.50E+02 I		1.50E+02 I		4.5E-04 C	4.2E-05 C	2.1E-05 C	3.8E-02 C	4.3E-03 C
N-NITROSODIMETHYLAMINE	62759		5.10E+01 I		5.10E+01 I		1.3E-03 C	1.2E-04 C	6.2E-05 C	1.1E-01 C	1.3E-02 C
N-NITROSODIPHENYLAMINE	86306		4.90E-03 I				1.4E+01 C	1.3E+00 C	6.4E-01 C	1.2E+03 C	1.3E+02 C
N-NITROSODIPROPYLAMINE	621647		7.00E+00 I				9.6E-03 C	8.9E-04 C	4.5E-04 C	8.2E-01 C	9.1E-02 C
N-NITROSO-N-ETHYLUREA	759739		1.40E+02 H				4.8E-04 C	4.5E-05 C	2.3E-05 C	4.1E-02 C	4.6E-03 C
N-NITROSO-N-METHYLETHYLAMINE	10595956		2.20E+01 I				3.0E-03 C	2.8E-04 C	1.4E-04 C	2.6E-01 C	2.9E-02 C
N-NITROSOPYRROLIDINE	930552		2.10E+00 I		2.10E+00 I		3.2E-02 C	3.0E-03 C	1.5E-03 C	2.7E+00 C	3.0E-01 C
M-NITROTOLUENE	99081	2.00E-02 E				y	1.2E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
O-NITROTOLUENE	88722	1.00E-02 H				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
P-NITROTOLUENE	99990	1.00E-02 H				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
NUSTAR	85509199	7.00E-04 I					2.6E+01 N	2.6E+00 N	9.5E-01 N	1.4E+03 N	5.5E+01 N
ORYZALIN	19044883	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
OXADIAZON	19666309	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
OXAMYL	23135220	2.50E-02 I					9.1E+02 N	9.1E+01 N	3.4E+01 N	5.1E+04 N	2.0E+03 N
OXYFLUORFEN	42874033	3.00E-03 I					1.1E+02 N	1.1E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
PARAQUAT DICHLORIDE	1910425	4.50E-03 I					1.6E+02 N	1.6E+01 N	6.1E+00 N	9.2E+03 N	3.5E+02 N
PARATHION	56382	6.00E-03 H					2.2E+02 N	2.2E+01 N	4.7E+00 N	2.2E+04 N	4.7E+02 N
**PENTACHLOROBENZENE	608935	8.00E-04 I					2.9E+01 N	2.9E+00 N	1.1E+00 N	1.6E+03 N	6.3E+01 N
**PENTACHLORONITROBENZENE	82688	3.00E-03 I	2.60E-01 H				2.6E-01 C	2.4E-02 C	1.2E-02 C	2.2E+01 C	2.5E+00 C
PENTACHLOROPHENOL	87865	3.00E-02 I	1.20E-01 I				5.6E-01 C	5.2E-02 C	2.6E-02 C	4.8E+01 C	5.3E+00 C
PERMETHRIN	52645531	5.00E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
PHENOL	108952	6.00E-01 I					2.2E+04 N	2.2E+03 N	8.1E+02 N	1.2E+06 N	4.7E+04 N
M-PHENYLENEDIAMINE	108452	6.00E-03 I					2.2E+02 N	2.2E+01 N	8.1E+00 N	1.2E+04 N	4.7E+02 N
O-PHENYLENEDIAMINE	95545		4.70E-02 H				1.4E+00 C	1.3E-01 C	6.7E-02 C	1.2E+02 C	1.4E+01 C
P-PHENYLENEDIAMINE	106503	1.90E-01 H					6.9E+03 N	6.9E+02 N	2.6E+02 N	3.9E+05 N	1.5E+04 N
2-PHENYLPHENOL	90437		1.90E-03 H				3.5E+01 C	3.3E+00 C	1.7E+00 C	3.0E+03 C	3.4E+02 C
PHOSPHINE	7803512	3.00E-04 I		8.60E-05 I			1.1E+01 N	3.1E-01 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
PHOSPHORIC ACID	7664382			2.90E-03 I				1.1E+01 N			
PHOSPHORUS (WHITE)	7723140	2.00E-05 I					7.3E-01 N	7.3E-02 N	2.7E-02 N	4.1E+01 N	1.6E+00 N
P-PHTHALIC ACID	100210	1.00E+00 H					3.7E+04 N	3.7E+03 N	1.4E+03 N	2.0E+06 N	7.8E+04 N
PHTHALIC ANHYDRIDE	85449	2.00E+00 I		3.43E-02 H			7.3E+04 N	1.3E+02 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
POLYBROMINATED BIPHENYLS		7.00E-06 H	8.90E+00 H				7.5E-03 C	7.0E-04 C	3.5E-04 C	6.4E-01 C	7.2E-02 C
POLYCHLORINATED BIPHENYLS	1336363		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1016	12674112	7.00E-05 I	7.00E-02 I		7.00E-02 I		9.6E-01 C	8.9E-02 C	4.5E-02 C	8.2E+01 C	5.5E+00 N
AROCLOR-1221	11104282		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1232	11141165		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1242	53469219		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1248	12672296		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1254	11097691	2.00E-05 I	2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
AROCLOR-1260	11096825		2.00E+00 I		2.00E+00 I		3.3E-02 C	3.1E-03 C	1.6E-03 C	2.9E+00 C	3.2E-01 C
POLYCHLORINATED TERPHENYLS	61788338		4.50E+00 E				1.5E-02 C	1.4E-03 C	7.0E-04 C	1.3E+00 C	1.4E-01 C
POLYNUCLEAR AROMATIC HYDROCARBONS:											
**ACENAPHTHENE	83329	6.00E-02 I				y	3.7E+02 N	2.2E+02 N	8.1E+01 N	1.2E+05 N	4.7E+03 N
**ANTHRACENE	120127	3.00E-01 I				y	1.8E+03 N	1.1E+03 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
BENZ[A]ANTHRACENE	56553		7.30E-01 E				9.2E-02 C	8.6E-03 C	4.3E-03 C	7.8E+00 C	8.7E-01 C
BENZO[B]FLUORANTHENE	205992		7.30E-01 E				9.2E-02 C	8.6E-03 C	4.3E-03 C	7.8E+00 C	8.7E-01 C
BENZO[K]FLUORANTHENE	207089		7.30E-02 E				9.2E-01 C	8.6E-02 C	4.3E-02 C	7.8E+01 C	8.7E+00 C
BENZO[A]PYRENE	50328		7.30E+00 I		3.10E+00 E		9.2E-03 C	2.0E-03 C	4.3E-04 C	7.8E-01 C	8.7E-02 C
CARBAZOLE	86748		2.00E-02 H				3.3E+00 C	3.1E-01 C	1.6E-01 C	2.9E+02 C	3.2E+01 C
CHRYSENE	218019		7.30E-03 E				9.2E+00 C	8.6E-01 C	4.3E-01 C	7.8E+02 C	8.7E+01 C
DIBENZ[A,H]ANTHRACENE	53703		7.30E+00 E				9.2E-03 C	8.6E-04 C	4.3E-04 C	7.8E-01 C	8.7E-02 C
DIBENZOFURAN	132649	4.00E-03 E				y	2.4E+01 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
FLUORANTHENE	206440	4.00E-02 I					1.5E+03 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
**FLUORENE	86737	4.00E-02 I				y	2.4E+02 N	1.5E+02 N	5.4E+01 N	8.2E+04 N	3.1E+03 N
INDENO[1,2,3-C,D]PYRENE	193395		7.30E-01 E				9.2E-02 C	8.6E-03 C	4.3E-03 C	7.8E+00 C	8.7E-01 C
2-METHYLNAPHTHALENE	91576	2.00E-02 E				y	1.2E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
**NAPHTHALENE	91203	2.00E-02 I		9.00E-04 I		y	6.5E+00 N	3.3E+00 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
**PYRENE	129000	3.00E-02 I				y	1.8E+02 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
PROMETON	1610180	1.50E-02 I					5.5E+02 N	5.5E+01 N	2.0E+01 N	3.1E+04 N	1.2E+03 N
PROMETRYN	7287196	4.00E-03 I					1.5E+02 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N

EPA Region III RBC Table 4-12/1999 Sources: EPA Regional Office, EPA Table 4-12/1999, EPA Table 4-12/1999, EPA Table 4-12/1999, EPA Table 4-12/1999, EPA Table 4-12/1999, EPA Table 4-12/1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
PROPACHLOR	1918167	1.30E-02 I					4.7E+02 N	4.7E+01 N	1.8E+01 N	2.7E+04 N	1.0E+03 N
PROPANIL	709988	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
PROPARGITE	2312358	2.00E-02 I					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
N-PROPYLBENZENE		1.00E-02 E				y	6.1E+01 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
PROPYLENE GLYCOL	57556	2.00E+01 H					7.3E+05 N	7.3E+04 N	2.7E+04 N	4.1E+07 N	1.6E+06 N
PROPYLENE GLYCOL, MONOETHYL ETHER	52125538	7.00E-01 H					2.6E+04 N	2.6E+03 N	9.5E+02 N	1.4E+06 N	5.5E+04 N
PROPYLENE GLYCOL, MONOMETHYL ETHER	107982	7.00E-01 H		5.70E-01 I			2.6E+04 N	2.1E+03 N	9.5E+02 N	1.4E+06 N	5.5E+04 N
PURSUIT	81335775	2.50E-01 I					9.1E+03 N	9.1E+02 N	3.4E+02 N	5.1E+05 N	2.0E+04 N
PYRIDINE	110861	1.00E-03 I					3.7E+01 N	3.7E+00 N	1.4E+00 N	2.0E+03 N	7.8E+01 N
QUINOLINE	91225		1.20E+01 H				5.6E-03 C	5.2E-04 C	2.6E-04 C	4.8E-01 C	5.3E-02 C
RDX	121824	3.00E-03 I	1.10E-01 I				6.1E-01 C	5.7E-02 C	2.9E-02 C	5.2E+01 C	5.8E+00 C
RESMETHRIN	10453868	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
**RONNEL	299843	5.00E-02 H					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
ROTENONE	83794	4.00E-03 I					1.5E+02 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
SELENIOS ACID	7783008	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
SELENIUM	7782492	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
SILVER	7440224	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
SIMAZINE	122349	5.00E-03 I	1.20E-01 H				5.6E-01 C	5.2E-02 C	2.6E-02 C	4.8E+01 C	5.3E+00 C
SODIUM AZIDE	26628228	4.00E-03 I					1.5E+02 N	1.5E+01 N	5.4E+00 N	8.2E+03 N	3.1E+02 N
SODIUM DIETHYLDITHIOCARBAMATE	148185	3.00E-02 I	2.70E-01 H				2.5E-01 C	2.3E-02 C	1.2E-02 C	2.1E+01 C	2.4E+00 C
STRONTIUM, STABLE	7440246	6.00E-01 I					2.2E+04 N	2.2E+03 N	8.1E+02 N	1.2E+06 N	4.7E+04 N
STRYCHNINE	57249	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
STYRENE	100425	2.00E-01 I		2.86E-01 I		y	1.6E+03 N	1.0E+03 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
2,3,7,8-TETRACHLORODIBENZODIOXIN	1746016		1.50E+05 H		1.50E+05 H		4.5E-07 C	4.2E-08 C	2.1E-08 C	3.8E-05 C	4.3E-06 C
**1,2,4,5-TETRACHLORO BENZENE	95943	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
1,1,1,2-TETRACHLOROETHANE	630206	3.00E-02 I	2.60E-02 I		2.60E-02 I	y	4.1E-01 C	2.4E-01 C	1.2E-01 C	2.2E+02 C	2.5E+01 C
1,1,2,2-TETRACHLOROETHANE	79345	6.00E-02 E	2.00E-01 I		2.00E-01 I	y	5.3E-02 C	3.1E-02 C	1.6E-02 C	2.9E+01 C	3.2E+00 C
TETRACHLOROETHENE	127184	1.00E-02 I	5.20E-02 E	1.4E-01 E	2.00E-03 E	y	1.1E+00 C	3.1E+00 C	6.1E-02 C	1.1E+02 C	1.2E+01 C
2,3,4,6-TETRACHLOROPHENOL	58902	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
**P,A,A,A-TETRACHLOROTOLUENE	5216251		2.00E+01 H				3.3E-03 C	3.1E-04 C	1.6E-04 C	2.9E-01 C	3.2E-02 C
1,1,1,2-TETRAFLUOROETHANE	811972			2.29E+01 I		y	1.7E+05 N	8.4E+04 N			
**TETRAHYDROFURAN	109999	2.00E-02 E	7.6E-03 E	8.6E-02 E	6.8E-03 E		8.8E+00 C	9.2E-01 C	4.2E-01 C	7.5E+02 C	8.4E+01 C
TETRYL	479458	1.00E-02 H					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
THALLIC OXIDE	1314325	7.00E-05 W					2.6E+00 N	2.6E-01 N	9.5E-02 N	1.4E+02 N	5.5E+00 N
THALLIUM	7440280	7.00E-05 O					2.6E+00 N	2.6E-01 N	9.5E-02 N	1.4E+02 N	5.5E+00 N
THALLIUM ACETATE	563688	9.00E-05 I					3.3E+00 N	3.3E-01 N	1.2E-01 N	1.8E+02 N	7.0E+00 N
THALLIUM CARBONATE	6533739	8.00E-05 I					2.9E+00 N	2.9E-01 N	1.1E-01 N	1.6E+02 N	6.3E+00 N
THALLIUM CHLORIDE	7791120	8.00E-05 I					2.9E+00 N	2.9E-01 N	1.1E-01 N	1.6E+02 N	6.3E+00 N
THALLIUM NITRATE	10102451	9.00E-05 I					3.3E+00 N	3.3E-01 N	1.2E-01 N	1.8E+02 N	7.0E+00 N
THALLIUM SULFATE (2:1)	7446186	8.00E-05 I					2.9E+00 N	2.9E-01 N	1.1E-01 N	1.6E+02 N	6.3E+00 N
THIOBENCARB	28249776	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
TIN	7440315	6.00E-01 H					2.2E+04 N	2.2E+03 N	8.1E+02 N	1.2E+06 N	4.7E+04 N
TITANIUM	7440326	4.00E+00 E		8.60E-03 E			1.5E+05 N	3.1E+01 N	5.4E+03 N	8.2E+06 N	3.1E+05 N
TITANIUM DIOXIDE	13463677	4.00E+00 E		8.60E-03 E			1.5E+05 N	3.1E+01 N	5.4E+03 N	8.2E+06 N	3.1E+05 N
TOLUENE	108883	2.00E-01 I		1.14E-01 I		y	7.5E+02 N	4.2E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
TOLUENE-2,4-DIAMINE	95807		3.20E+00 H				2.1E-02 C	2.0E-03 C	9.9E-04 C	1.8E+00 C	2.0E-01 C
TOLUENE-2,5-DIAMINE	95705	6.00E-01 H					2.2E+04 N	2.2E+03 N	8.1E+02 N	1.2E+06 N	4.7E+04 N
TOLUENE-2,6-DIAMINE	823405	2.00E-01 H					7.3E+03 N	7.3E+02 N	2.7E+02 N	4.1E+05 N	1.6E+04 N
P-TOLUIDINE	106490		1.90E-01 H				3.5E-01 C	3.3E-02 C	1.7E-02 C	3.0E+01 C	3.4E+00 C
**TOXAPHENE	8001352		1.10E+00 I		1.10E+00 I		6.1E-02 C	5.7E-03 C	2.9E-03 C	5.2E+00 C	5.8E-01 C
**1,2,4-TRIBROMOBENZENE	615543	5.00E-03 I					1.8E+02 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
TRIBUTYLTIN OXIDE	56359	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
2,4,6-TRICHLOROANILINE	634935		3.40E-02 H				2.0E+00 C	1.8E-01 C	9.3E-02 C	1.7E+02 C	1.9E+01 C
1,2,4-TRICHLORO BENZENE	120821	1.00E-02 I		5.70E-02 H		y	1.9E+02 N	2.1E+02 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
1,1,1-TRICHLOROETHANE	71556	2.00E-02 E		2.86E-01 E		y	5.4E+02 N	1.0E+03 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
1,1,2-TRICHLOROETHANE	79005	4.00E-03 I	5.70E-02 I		5.60E-02 I	y	1.9E-01 C	1.1E-01 C	5.5E-02 C	1.0E+02 C	1.1E+01 C
TRICHLOROETHENE	79016	6.00E-03 E	1.10E-02 E		6.00E-03 E	y	1.6E+00 C	1.0E+00 C	2.9E-01 C	5.2E+02 C	5.8E+01 C
TRICHLOROFLUOROMETHANE	75694	3.00E-01 I		2.00E-01 A		y	1.3E+03 N	7.3E+02 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
2,4,5-TRICHLOROPHENOL	95954	1.00E-01 I					3.7E+03 N	3.7E+02 N	1.4E+02 N	2.0E+05 N	7.8E+03 N
2,4,6-TRICHLOROPHENOL	88062		1.10E-02 I		1.00E-02 I		6.1E+00 C	6.3E-01 C	2.9E-01 C	5.2E+02 C	5.8E+01 C

EPA Region III RBC Table 4/12/1999 Sources: EPA Regional III RBC Table 4/12/1999 E = EPA-NCEA provisional value O = other							Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c Risk-based concentrations				
Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
2,4,5-T	93765	1.00E-02 I					3.7E+02 N	3.7E+01 N	1.4E+01 N	2.0E+04 N	7.8E+02 N
2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93721	8.00E-03 I					2.9E+02 N	2.9E+01 N	1.1E+01 N	1.6E+04 N	6.3E+02 N
1,1,2-TRICHLOROPROPANE	598776	5.00E-03 I				y	3.0E+01 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
1,2,3-TRICHLOROPROPANE	96184	6.00E-03 I	7.00E+00 H			y	1.5E-03 C	8.9E-04 C	4.5E-04 C	8.2E-01 C	9.1E-02 C
1,2,3-TRICHLOROPROPENE	96195	5.00E-03 H				y	3.0E+01 N	1.8E+01 N	6.8E+00 N	1.0E+04 N	3.9E+02 N
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76131	3.00E+01 I		8.60E+00 H		y	5.9E+04 N	3.1E+04 N	4.1E+04 N	6.1E+07 N	2.3E+06 N
1,2,4-TRIMETHYLBENZENE	95636	5.00E-02 E		1.70E-03 E		y	1.2E+01 N	6.2E+00 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
1,3,5-TRIMETHYLBENZENE	108678	5.00E-02 E		1.70E-03 E		y	1.2E+01 N	6.2E+00 N	6.8E+01 N	1.0E+05 N	3.9E+03 N
TRIMETHYL PHOSPHATE	512561		3.70E-02 H				1.8E+00 C	1.7E-01 C	8.5E-02 C	1.5E+02 C	1.7E+01 C
1,3,5-TRINITROBENZENE	99354	3.00E-02 I					1.1E+03 N	1.1E+02 N	4.1E+01 N	6.1E+04 N	2.3E+03 N
2,4,6-TRINITROTOLUENE	118967	5.00E-04 I	3.00E-02 I				2.2E+00 C !	2.1E-01 C !	1.1E-01 C !	1.9E+02 C !	2.1E+01 C !
URANIUM (SOLUBLE SALTS)		3.00E-03 I					1.1E+02 N	1.1E+01 N	4.1E+00 N	6.1E+03 N	2.3E+02 N
VANADIUM	7440622	7.00E-03 H					2.6E+02 N	2.6E+01 N	9.5E+00 N	1.4E+04 N	5.5E+02 N
VANADIUM PENTOXIDE	1314621	9.00E-03 I					3.3E+02 N	3.3E+01 N	1.2E+01 N	1.8E+04 N	7.0E+02 N
VANADIUM SULFATE	16785812	2.00E-02 H					7.3E+02 N	7.3E+01 N	2.7E+01 N	4.1E+04 N	1.6E+03 N
VINCLOZOLIN	50471448	2.50E-02 I					9.1E+02 N	9.1E+01 N	3.4E+01 N	5.1E+04 N	2.0E+03 N
VINYL ACETATE	108054	1.00E+00 H		5.71E-02 I		y	4.1E+02 N	2.1E+02 N	1.4E+03 N	2.0E+06 N	7.8E+04 N
VINYL CHLORIDE	75014		1.90E+00 H		3.00E-01 H	y	1.9E-02 C	2.1E-02 C	1.7E-03 C	3.0E+00 C	3.4E-01 C
WARFARIN	81812	3.00E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
M-XYLENE	108383	2.00E+00 H				y	1.2E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
O-XYLENE	95476	2.00E+00 H				y	1.2E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
P-XYLENE	106423					y					
XYLENES	1330207	2.00E+00 I				y	1.2E+04 N	7.3E+03 N	2.7E+03 N	4.1E+06 N	1.6E+05 N
ZINC	7440666	3.00E-01 I					1.1E+04 N	1.1E+03 N	4.1E+02 N	6.1E+05 N	2.3E+04 N
ZINC PHOSPHIDE	1314847	3E-04 I					1.1E+01 N	1.1E+00 N	4.1E-01 N	6.1E+02 N	2.3E+01 N
ZINEB	12122677	5E-02 I					1.8E+03 N	1.8E+02 N	6.8E+01 N	1.0E+05 N	3.9E+03 N

APPENDIX F:

Design of Land Treatment Systems (Table 10.3 Composition of Soils)

Table 10.3 Composition of Soils (Bowen 1966)

Element	Mean Dry Soil Range (ppm)	Element	Mean Dry Soil Range (ppm)
Ag	0.1 (0.01 - 5)	Mg	5,000 (600 - 6,000)
Al	71,000 (10,000 - 300,000)	Mn	850 (100 - 4,000)
As	6 (0.1 - 40)	Mo	2 (0.2 - 5)
B	10 (2 - 100)	N	1,000 (200 - 2,500)
Ba	500 (100 - 3,000)	Na	6,300 (750 - 7,500)
Be	6 (0.1 - 40)	Ni	40 (10 - 1,000)
Br	5 (1 - 10)	O	490,000
C	20,000	P	650
Ca	13,700 (7,000 - 500,000)	Pb	10 (2 - 200)
Cd	0.06 (0.01 - 0.7)	Ra	8×10^{-7} (3 - 20×10^{-7})
Ce	50	Rb	100 (20 - 600)
Cl	100	S	700 (30 - 900)
Co	8 (1 - 40)	Sb	(2 - 107)
Cr	100 (5 - 3,000)	Sc	7 (10 - 25)
Cs	6 (0.3 - 25)	Se	0.2 (0.1 - 2)
Cu	20 (2 - 100)	Si	330,000 (250,000-350,000)
F	200 (30 - 300)	Sn	10 (2 - 200)
Fe	38,000 (7,000 - 550,000)	Sr	300 (50 - 1,000)
Ga	30 (0.4 - 300)	Th	5 (0.1 - 12)
Ge	1 (1 - 50)	Ti	5,000 (1,000 - 10,000)
Hf	6	Tl	0.1
Hg	0.03 (0.01 - 0.3)	U	1 (0.9 - 9)
I	5	V	100 (20 - 500)
K	14,000 (400 - 30,000)	Y	50 (25 - 250)
La	30 (1 - 5,000)	Zn	50 (10 - 300)
Li	30 (7 - 200)	Zr	300 (60 - 2,000)

The figures refer to oven dried soils. Soils near mineral deposits have been omitted in computing ranges. There are insufficient data for As, Be, Cd, Ca, Cs, Ge, Hf, La, Sb, Sn, Tl and U, and the values quoted for these elements may require revision.

APPENDIX G:

Detected Analytical Concentrations vs. Risk Based Concentrations

Soil Sample TP-10-2

Detected Analytical Concentrations vs. Risk Based Concentrations

Target Analyte	Detected Concentration (ppm)	Risk Based Concentrations - Residential Standard (ppm)	*Mean Background Soil Range (ppm)
TAL-Metals			
Aluminum	12,300	78,000	71,000 (10,000-300,000)
Antimony	0.65	31	**
Arsenic	2.1	0.43	6 (0.1-40)
Barium	102	5,500	500 (100-3,000)
Calcium	2,220	**	13,700 (7,000-500,000)
Chromium	23.2	**	100 (5-3,000)
Cobalt	5	4,700	8 (1-40)
Copper	25.1	3,100	20 (2-100)
Iron	20,000	23,000	38,000 (7,000-550,000)
Lead	57.7	**	10 (2-200)
Magnesium	3,400	**	5,000 (600-6,000)
Manganese	214	1,600	850 (100-4,000)
Nickel	7.2	1,600	40 (10-1,000)
Potassium	3,810	**	14,000 (400-30,000)
Sodium	231	**	6,300 (750-7,500)
Vanadium	41.4	550	100 (20-500)
Zinc	93.1	23,000	50 (100-300)
BTEX			
Toluene	0.0038	16,000	**
TPH-GRO	7.02	100	**
TPH-DRO	4,390	100	**

* Background information based on Overcash and Pal, "Design of Land Treatment Systems for Industrial Waste-Theory and Practice"

** No RBC or BackGround Information Exists for this Analyte

Soil Sample TP-28-4

Detected Analytical Concentrations vs. Risk Based Concentrations

Target Analyte	Detected Concentration (ppm)	Risk Based Concentrations - Residential Standard (ppm)	*Mean Background Soil Range (ppm)
PCBs			
Aroclor 1260	0.01050	0.32	**
TAL-Metals			
Aluminum	13,900	78,000	71,000 (10,000-300,000)
Arsenic	1.2	0.43	6 (0.1-40)
Barium	99.5	5,500	500 (100-3,000)
Calcium	1,440	**	13,700 (7,000-500,000)
Chromium	12.8	**	100 (5-3,000)
Cobalt	5.5	4,700	8 (1-40)
Copper	22.8	3,100	20 (2-100)
Iron	16,400	23,000	38,000 (7,000-550,000)
Lead	4.8	**	10 (2-200)
Magnesium	4,190	**	5,000 (600-6,000)
Manganese	242	1,600	850 (100-4,000)
Nickel	3.8	1,600	40 (10-1,000)
Potassium	3,570	**	14,000 (400-30,000)
Sodium	59.8	**	6,300 (750-7,500)
Vanadium	38.6	550	100 (20-500)
Zinc	40.9	23,000	50 (100-300)
TCLP-Metals			
Barium	1.1	***	***

* Background information based on Overcash and Pal, "Design of Land Treatment Systems for Industrial Waste-Theory and Practice"

** No RBC or BackGround Information Exists for this Analyte

*** TCLP-Metal values were not compared to RBCs because they represent only the extractable concentration

Soil Sample TP-31-6

Detected Analytical Concentrations vs. Risk Based Concentrations

Target Analyte	Detected Concentration (ppm)	Risk Based Concentrations - Residential Standard (ppm)	*Mean Background Soil Range (ppm)
PCBs			
Aroclor 1260	0.172	0.32	**
TAL-Metals			
Aluminum	15400	78,000	71000 (10000-300000)
Barium	107	5,500	500 (100-3000)
Cadmium	0.95	39	0.06 (0.1-40)
Calcium	1970	**	13700 (7000-500000)
Chromium	19.6	**	100 (5-3000)
Cobalt	6.7	4,700	8 (1-40)
Copper	30.8	3,100	20 (2-100)
Iron	18600	23,000	38000 (7000-550000)
Lead	37.2	**	10 (2-200)
Magnesium	4350	**	5000 (600-6000)
Manganese	313	1,600	850 (100-4000)
Nickel	6.2	1,600	40 (10-1000)
Potassium	3040	**	14000 (400-30000)
Sodium	82.4	**	6300 (750-7500)
Vanadium	39.1	550	100 (20-500)
Zinc	203	23,000	50 (100-300)
TCLP-Metals			
Barium	0.82	**	**

* Background information based on Overcash and Pal, "Design of Land Treatment Systems for Industrial Waste-Theory and Practice"

** No RBC or BackGround Information Exists for this Analyte

Disposal Sample DS-1 **Detected Analytical Concentrations** **vs. Risk Based Concentrations**

Target Analyte	Detected Concentration (ppm)
Ignitability (Flashpoint)	>210
TPH	
TPH (C6-C12)	ND
TPH (>C12-C28)	167,000
TPH (>C28-C35)	170,000
TPH (C6-C35)	337,000

APPENDIX H:

EcoSearch Environmental Database Search

EcoSearch Environmental Resources, Inc.

8606 Allisonville Road, Suite 300
Indianapolis, Indiana 46250
ph: (317) 577-9797 fax: (317) 577-9191

EcoSearch Government Records Search

Type of Report:	Priority Risk Report
Site Location:	Embrey Dam Project Site Wicklow Drive Fredericksburg, VA 22401
Date:	January 10, 2002
Report ID Number:	2714-702
Especially Prepared For:	Mr. Bryan Gensler Industrial Marine Service, Inc
PO / Project #:	23180C 351.3223

Limits of Information:

Customer proceeds at its own risk in choosing to rely on EcoSearch Environmental Resources, Inc. ("EcoSearch") services, in whole or in part, prior to proceeding with any transaction. EcoSearch cannot be an insurer of the accuracy of the information, errors occurring in the conversion of data, or for customer's use of the data. EcoSearch and its affiliated companies, officers, agents, employees, and independent contractors cannot be held liable for accuracy, storage, delivery, loss, or expense suffered by the customer resulting directly or indirectly from any information provided by EcoSearch Environmental Resources, Inc.

Thank you for choosing EcoSearch.

Introduction

We want to thank you for your order requesting the enclosed site assessment.

EcoSearch makes every effort possible to combine the most accurate environmental data available into an understandable and easy-to-use format.

While every attempt has been made to ensure accuracy of the information presented, we cannot guarantee the accuracy of the data from the original sources, nor can we guarantee that no transcription or plotting errors have occurred.

If any concerns arise from your review of the databases in this report, please call the appropriate agency involved. As a service, we have included phone numbers in the database description section of this report to help you in your evaluation.

The enclosed maps present a working approximation of the location of surrounding environmental sites based primarily on available accurate site addresses. These maps should not be used for purposes more correctly handled by surveys.

EcoSearch is driven by its mission to present the most responsive, technically sound, and cost-effective environmental data services available to our customer.

Read Me First

The following suggestions are offered in an attempt to help you in using and understanding this site assessment from EcoSearch:

1. Skim over the entire report to familiarize yourself with its contents and layout.
2. You will notice that the information is presented following this general concept: we begin by giving sections that summarize data and then give detailed information about these summaries as you proceed further into the report.
3. Then refer to the section titled "Statistical Overview". You will need to take a moment to read the column headings and the data below them. Also, as you go down the first column (left side) you will probably need to look back at the preceeding section titled "Database Descriptions". Please pay particular attention to the radii searched as they vary according to the database. These are ASTM standards that we meet and exceed. Your site's datum is the third, shaded column. Also, the next column showing database hits within the first radius is important as it will include data about adjoining properties. The unmappable sites have their own section with a cover page explaining them.
4. The next section titled "Maps" is important as it gives a very clear visual presentation of the site, and which database(s) are at the site itself or within the study radii.
5. The site summary page(s) tells you by map ID# which database is at that location as well as the site's name and distance/direction from your study site. You will notice that the numbering corresponds to the distance from the subject site-- eg. #1 is your site itself or the site closest to it, #2 is further away. This continues until all database hits have been summarized within the largest study radius. Your report may extend further than one mile if you asked us to extend the radii.
6. As you will recall our format goes from summary-type pages to detailed information. Therefore, the next section is "Detailed Data". Here extensive data is given about each database hit. The map ID#, distance, and direction are in the top left corner. Further data follows.
7. The "Unmappable" section was referred to earlier. In this summary you will find those sites. Please read the cover page as it describes unmappable sites and our efforts to minimize and/or eliminate them from all of our site assessments.
8. The last section -- "Glossary/Acronyms" is self-explanatory and often helpful to our customers.

If you would like further help in understanding our reports please refer to the frequently asked questions list on our web site or call as our intention is to have this report helpful to you.

Database Descriptions -- Federal Databases

NPL

National Priorities List

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(703) 603-8881

Data Date: October 16, 2001
Release Date: October 16, 2001
Active Date: November 29, 2001
Last Contact Date: November 29, 2001

The NPL is a subset of the CERCLIS and lists over 1,150 of the nation's most dangerous sites of uncontrolled or hazardous waste which require cleanup. Also known as the Superfund List, the sites are scored according to the hazardous ranking system.

CERCLA (Active)

Comprehensive Environmental Response, Compensation, and Liability Information System (Active)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
1-800-775-5037

Data Date: October 16, 2001
Release Date: October 16, 2001
Active Date: November 29, 2001
Last Contact Date: November 29, 2001

CERCLIS maintains information on over 15,000 sites nationally identified as hazardous or potentially hazardous which may require action. These sites are currently being investigated or an investigation has been completed regarding the release of hazardous substances. The most serious of this list as ranked by the hazardous ranking system are transferred to the NPL.

CERCLA (NFRAP Archive)

Comprehensive Environmental Response, Compensation, and Liability Information System (NFRAP Archive)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
1-800-775-5037

Data Date: October 16, 2001
Release Date: October 16, 2001
Active Date: November 29, 2001
Last Contact Date: November 29, 2001

For more complete information purposes we include sites which have been reclassified as No Further Remedial Action Planned (NFRAP) by the EPA. This action was taken by the EPA beginning February 1995 as a part of the Brownfields Redevelopment Program. These former CERCLIS sites, also known as the CERCLIS Archive, have been delisted because a lack of significant contamination was found.

RCRA TSD

Resource Conservation and Recovery Information System -- Treatment, Storage, and Disposal Facilities

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-4610

Data Date: June 15, 2000
Release Date: June 15, 2000
Active Date: June 18, 2001
Last Contact Date: October 11, 2001

RCRIS contains information on hazardous waste handlers regulated by the US Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA). It is a national system used to track events and activities which fall under RCRA. The TSD database is a subset of the complete RCRIS file which includes facilities which treat, store, dispose, or incinerate hazardous waste. Additionally, compliance and corrective action (CORRACTS) information is included.

RCRA Generator

Resource Conservation and Recovery Information System - Large and Small Quantity Generators, Transporters, and Notifiers

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
800-424-9346

Data Date: June 28, 2001
Release Date: June 28, 2001
Active Date: November 28, 2001
Last Contact Date: October 11, 2001

RCRIS contains information on hazardous waste handlers regulated by the US Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA). It is a national system used to track events and activities which fall under RCRA. The generators database is a subset of the complete RCRIS file which includes hazardous waste generators which create more than 100kg of hazardous waste per month or meet other requirements of RCRA. We also include RCRA Notifiers, Transporters, and formerly regulated RCRA Sites for more complete hazardous waste information. Additionally, compliance and corrective action information is included.

RAATS

RCRA Administrative Action Tracking System

US Environmental Protection Agency
Office of Enforcement and Compliance Assurance
(202) 564-4104

Data Date: April 14, 1995
Release Date: Not Available
Active Date: April 17, 1995
Last Contact Date: October 11, 2001

The RCRA Administrative Action Tracking System contains additional information on RCRA enforcement actions. Data includes the type of action, proposed penalty, and final penalty amount. This is a historical database and will not be updated by the source agency. EcoSearch will call once a year to verify historical status.

CORRACTS

Resource Conservation and Recovery Information System -- Corrective Action Sites

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-4610

Data Date: April 15, 2000
Release Date: April 15, 2000
Active Date: August 7, 2000
Last Contact Date: November 9, 2001

The CORRACTS database includes RCRIS (Resource Conservation and Recovery Information System) sites with reported corrective action. This information is also reported in the standard RCRIS detailed data.

ERNS

Emergency Response Notification System

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-2342

Data Date: January 1, 2001
Release Date: January 1, 2001
Active Date: March 17, 2001
Last Contact Date: October 11, 2001

ERNS is a national database which contains information on specific notification of releases of oil and hazardous substances into the environment. The system stores data regarding the site of the spill, the material released, and the medium into which it occurred.

PADS

PCB Activity Database System

US Environmental Protection Agency
Office of Pollution Prevention and Toxics
(202) 260-3992

Data Date: November 20, 1999
Release Date: November 20, 1999
Active Date: February 18, 2000
Last Contact Date: October 12, 2001

This database stores information about facilities which handle PCBs and file EPA form 7710-53. It is divided into storage facilities, disposers, generators, and transporters.

TRI

Toxic Release Inventory

US Environmental Protection Agency
Office of Pollution Prevention and Toxics
(202) 260-1531

Data Date: October 1997
Release Date: November 2000
Active Date: March 17, 2000
Last Contact Date: October 11, 2001

TRI contains information from facilities which manufacture, process, or import any of the over 300 listed toxic chemicals which are released directly into air, water, or land or are transported off-site. The database includes facts on amounts of chemicals stored and emitted from the facility. This database is released on an infrequent basis by the US EPA. EcoSearch includes information from 1987 through the 1996 reporting year.

SSTS

Section Seven Tracking System

US Environmental Protection Agency
Office of Prevention, Pesticides, and Toxic Substances
(202) 564-5008

Data Date: July 31, 1998
Release Date: Not Available
Active Date: August 27, 1998
Last Contact Date: October 11, 2001

Formerly FATES, this system tracks the registration of pesticide-producing establishments and tracks the types and amounts of pesticides, active ingredients, and devices which are sold, produced, or distributed annually.

DOCKET

Civil Enforcement Docket

US Environmental Protection Agency
Office of Enforcement
(202) 564-4114

Data Date: September 3, 1998
Release Date: Not Available
Active Date: February 3, 1999
Last Contact Date: October 11, 2001

The Civil Enforcement Docket is information on civil and administrative actions filed by the Department of Justice for the US Environmental Protection Agency. This record has been continually updated since 1972 and includes data regarding facility name, dates, laws violated, and penalties assessed.

TSCA

Toxic Substances Control Act Inventory

US Environmental Protection Agency

(202) 554-1404

Data Date: May 14, 1986

Release Date: Not Available

Last Contact Date: October 11, 2001

The Toxic Substances Control Act Inventory includes the locations and chemical production information of more than 7000 processors and manufacturers of chemicals. This database is no longer released to the public by the US EPA.

Database Descriptions -- State Databases

HWS

Virginia Hazardous Waste Sites List (CERCLA)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response

Data Date:	N/A
Release Date:	N/A
Active Date:	N/A
Last Contact Date:	November 27, 2001

The CERCLIS list is a compilation of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation and ultimately placed on the National Priorities List. Due to the fact that the Commonwealth of Virginia does not have a formal "State Superfund" program, the federal EPA's CERCLIS database is considered to be the equivalent of a State Hazardous Waste Sites list.

VRS

Virginia Voluntary Remediation Site Listing

Virginia Department of Environmental Quality
Site Investigation Section
(804) 698-4207

Data Date:	March 24, 2001
Release Date:	March 24, 2001
Active Date:	March 29, 2001
Last Contact Date:	October 8, 2001

The Virginia Voluntary Remediation Site Listing is a summary report of all sites which have been remediated or are currently being remediated, on a voluntary basis.

SWF

Virginia Solid Waste Management Facilities

Virginia Department of Waste Management
Solid Waste Section
(804)698-4147

Data Date:	August 8, 2000
Release Date:	August 8, 2000
Active Date:	December 2, 2000
Last Contact Date:	November 27, 2001

The Virginia Solid Waste Facility List contains summary information pertaining to all active and inactive permitted solid waste landfills and processing facilities located within the Commonwealth of Virginia.

LPST

Virginia Leaking Petroleum Storage Tank List

Virginia Department of Environmental Quality
Underground Storage Tank Section
(804)762-4313

Data Date:	October 4, 2001
Release Date:	October 4, 2001
Active Date:	November 20, 2001
Last Contact Date:	November 20, 2001

The Virginia LUST report contains summary information pertaining to all reported leaking underground storage tanks located within the Commonwealth of Virginia.

UST

Virginia Underground Storage Tank List

Virginia Department of Environmental Quality
Underground Storage Tank Section
(804) 698-4313

Data Date:	October 4, 2001
Release Date:	October 4, 2001
Active Date:	November 20, 2001
Last Contact Date:	November 20, 2001

The Virginia UST is a comprehensive listing of all registered underground storage tanks located within the Commonwealth of Virginia.

EcoSearch Statistical Overview

Property Information					
Wicklow Drive					
Fredericksburg, VA 22401					
Latitude:	38.322	N	Longitude:	77.497139	W

Search Parameters	
Report:	Priority Risk Report
Radii:	ASTM*
Zip Code(s):	22401 22405
City:	Fredericksburg Falmouth

FEDERAL DATABASES	Radius (miles)	Mappable Sites					Unmappable Sites		
		Total	Site	within 1/4mi	0.25 - 0.50mi	0.50 - 1.00mi	Zip Code	City	County
NPL	1.000	0	0	0	0	0	0	0	0
CERCLA (Active)	1.000	0	0	0	0	0	0	0	0
CERCLA (NFRAP Archive)	1.000	0	0	0	0	0	0	0	0
RCRA TSD	1.000	0	0	0	0	0	0	0	0
RCRA Generator	0.250	0	0	0	-	-	0	0	0
CORRACTS	1.000	0	0	0	0	0	0	0	0
ERNS	0.250	0	0	0	-	-	-	-	-
PADS	1.000	0	0	0	0	0	0	-	-
TRI	0.500	0	0	0	0	-	0	0	0
SSTS	1.000	0	0	0	0	0	0	0	0
DOCKET	1.000	0	0	0	0	0	0	0	0
TSCA	1.000	0	0	0	0	0	0	-	-

STATE DATABASES	Radius (miles)	Mappable Sites					Unmappable Sites		
		Total	Site	within 1/4mi	0.25 - 0.50mi	0.50 - 1.00mi	Zip Code	City	County
HWS	1.000	0	0	0	0	0	0	0	0
VRS	1.000	0	0	0	0	0	0	0	0
SWF	1.000	0	0	0	0	0	0	0	0
LPST	0.500	0	0	0	0	-	0	0	0
UST	0.250	0	0	0	-	-	8	0	0

MANUAL GEOCODING:^	For this city/township,	379	sites were manually plotted by EcoSearch.
---------------------------	-------------------------	------------	---

* This database search and study radii meets or exceeds the ASTM (American Society of Testing and Materials) standards for a government records review. N/A denotes an ASTM-required database which is not available from the state.

^ Manual Geocoding: Plotting environmental site data using paper maps and phone calls to properly place the information on the map.

Accurate street addresses are required for records to be found at the study property.

Mappable Sites are environmental sites which were located and appear on the enclosed EcoSearch Map, Site Summary, and Detailed Data sections of the report. These sites are summarized based on proximity to the study site.

Unmappable Sites are governmental records with incomplete or inaccurate address information. These sites could not be located on the street map, but have been searched by the Zip Codes, Cities, and County specified in the search parameters. Further investigation of these sites and their relationship to your study site is necessary.

EcoSearch Environmental Resources, Inc.

Priority Risk Report Map

Report ID: 2714-702
Site: Wicklow Drive
Fredericksburg, VA 22401

- ★ Study Site
- ★ Study Site Matches Database

FEDERAL DATABASES		Radius (mi)
■	NPL Sites	1.00
■	CERCLA (Active) Sites	1.00
■	CERCLA (NFRAP Archive) Sites	1.00
▲	RCRA TSD Sites	1.00
▲	RCRA Generator Sites	0.25
◆	CORRACTS Sites	1.00
▼	ERNS Sites	0.25
●	PADS Sites	1.00
+	TRI Sites	0.50
★	SSTS Sites	1.00
●	DOCKET Sites	1.00
▼	TSCA Sites	1.00

STATE DATABASES		Radius (mi)
■	HWS Sites	1.00
■	VRS Sites	1.00
◆	SWF Sites	1.00
◆	LPST Sites	0.50
◆	UST Sites	0.25

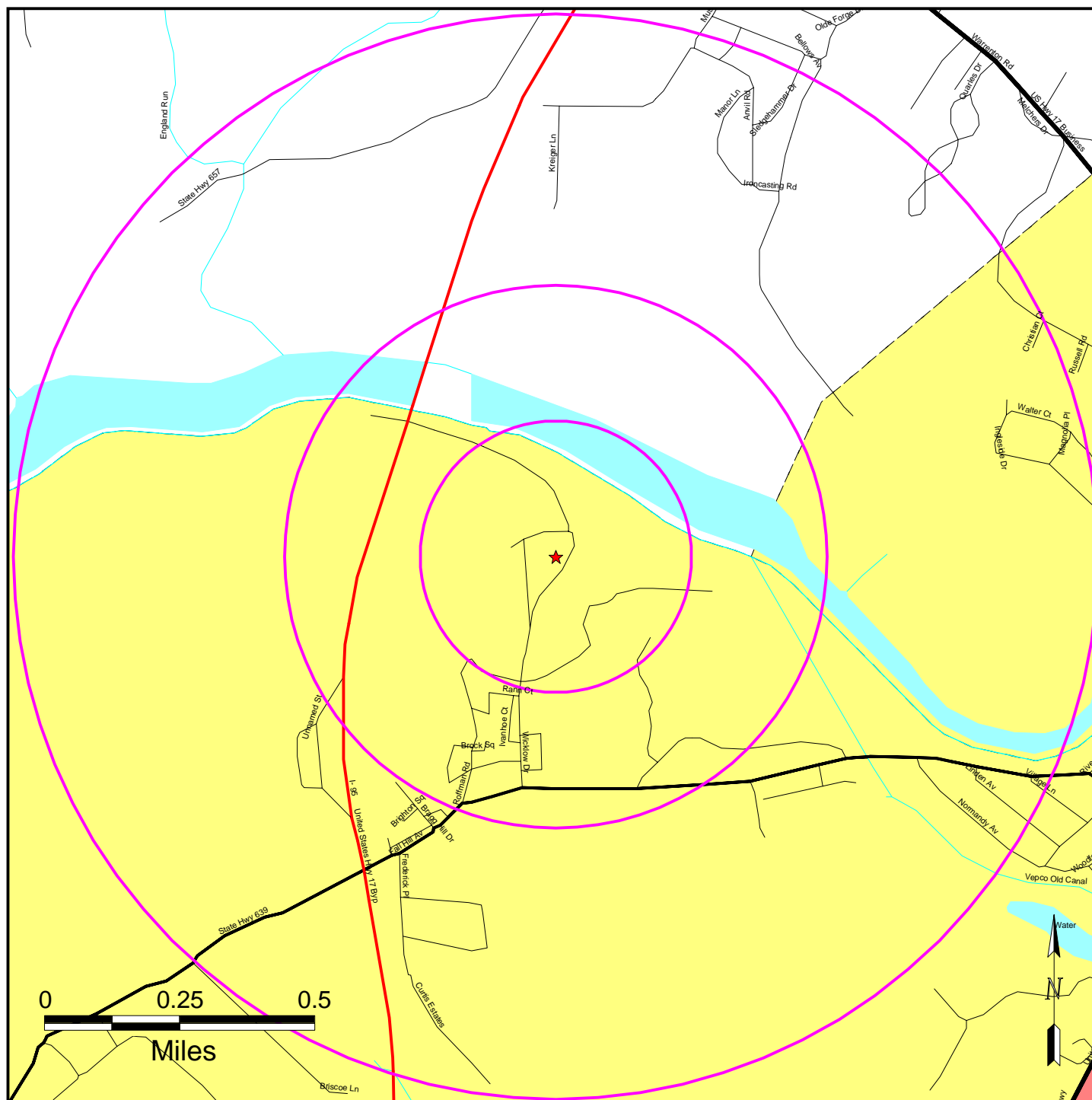
MULTIPLE MATCHES / AREAS

- Two Database Matches
- Three or More Matches
- Database Area Site

MAP LEGEND

- Parks
- Incorp. Areas
- Water
- Cemeteries
- Streets
- Secondary Roads
- Primary Roads
- Freeways
- +++ Railroads
- Boundaries

Radii: 1/4 mile, 1/2 mile, 1 mile



Note: The information contained on this map is subject to the general disclaimer on the first page.

EcoSearch Environmental Resources, Inc.

Priority Risk Report Map

Report ID: 2714-702
Site: Wicklow Drive
Fredericksburg, VA 22401

- ★ Study Site
- ★ Study Site Matches Database

FEDERAL DATABASES		Radius (mi)
■	NPL Sites	1.00
■	CERCLA (Active) Sites	1.00
■	CERCLA (NFRAP Archive) Sites	1.00
▲	RCRA TSD Sites	1.00
▲	RCRA Generator Sites	0.25
◆	CORRACTS Sites	1.00
▼	ERNS Sites	0.25
●	PADS Sites	1.00
+	TRI Sites	0.50
★	SSTS Sites	1.00
●	DOCKET Sites	1.00
▼	TSCA Sites	1.00

STATE DATABASES		Radius (mi)
■	HWS Sites	1.00
■	VRS Sites	1.00
◆	SWF Sites	1.00
◆	LPST Sites	0.50
◆	UST Sites	0.25

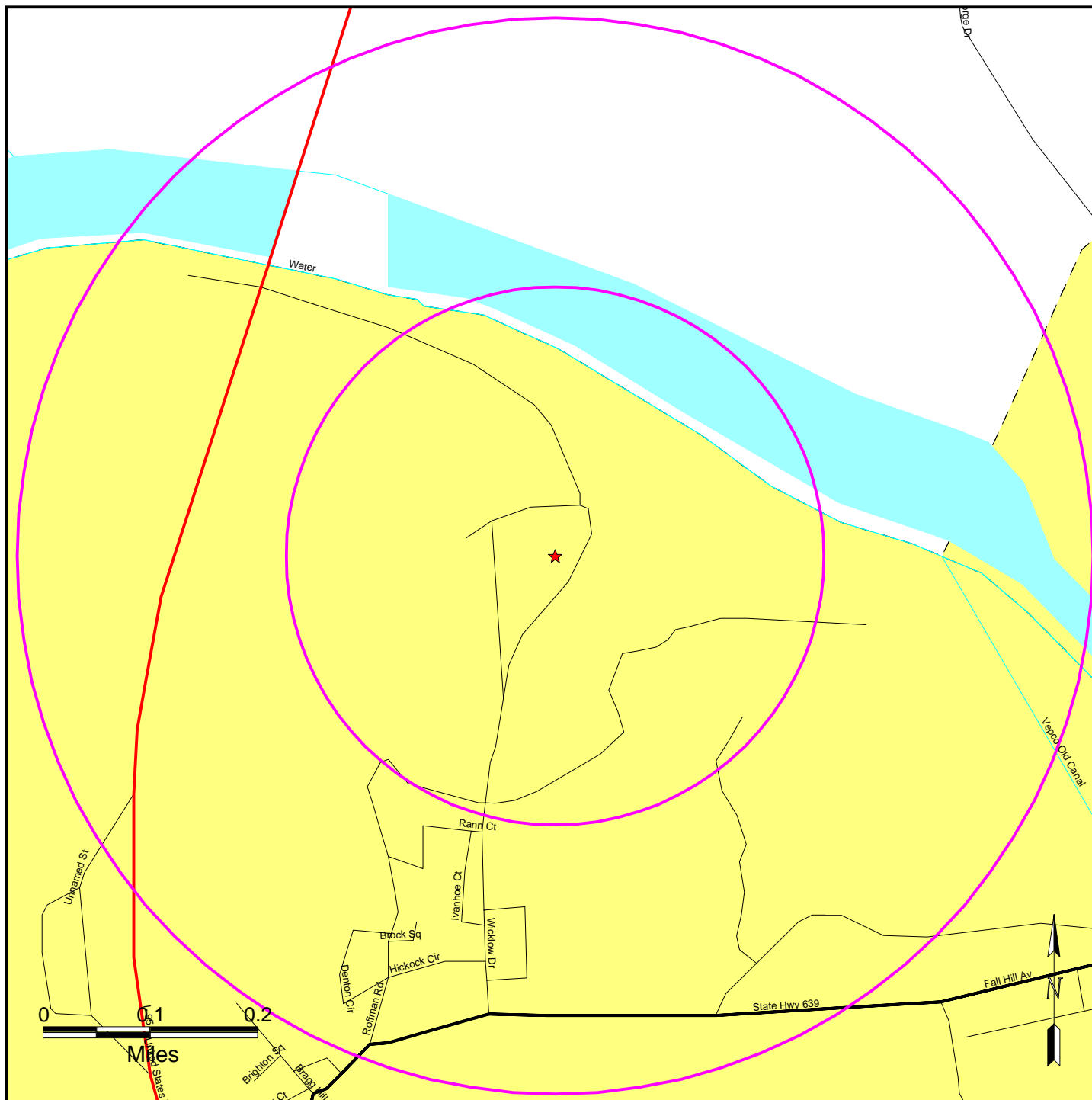
MULTIPLE MATCHES / AREAS

- Two Database Matches
- Three or More Matches
- Database Area Site

MAP LEGEND

- Parks
- Incorp. Areas
- Water
- Cemeteries
- Streets
- Secondary Roads
- Primary Roads
- Freeways
- +++ Railroads
- Boundaries

Radii: 1/4 mile, 1/2 mile, 1 mile



Note: The information contained on this map is subject to the general disclaimer on the first page.

EcoSearch Environmental Resources, Inc.

USGS 7.5 Minute Topographical Map

Report ID: 2714-702
Site: Wicklow Drive
Fredericksburg, VA 22401

○ Target Area

Map Features are Color Coded

Black -- Cultural features such as roads and buildings.

Blue -- Hydrographic features such as lakes and rivers.

Brown -- Hypsographic (elevation) features shown by contour lines.

Green -- Woodland cover, scrub, orchards, and vineyards.

Red -- Important roads and public land survey system.

Purple -- Features added from aerial photographs during map revision.
The changes are not field checked.

A detailed Topographic Map Symbols pamphlet is available from EcoSearch free upon request.

Radii: 0.25 mile, 0.50 mile, 1.00 mile

Topographical Maps:

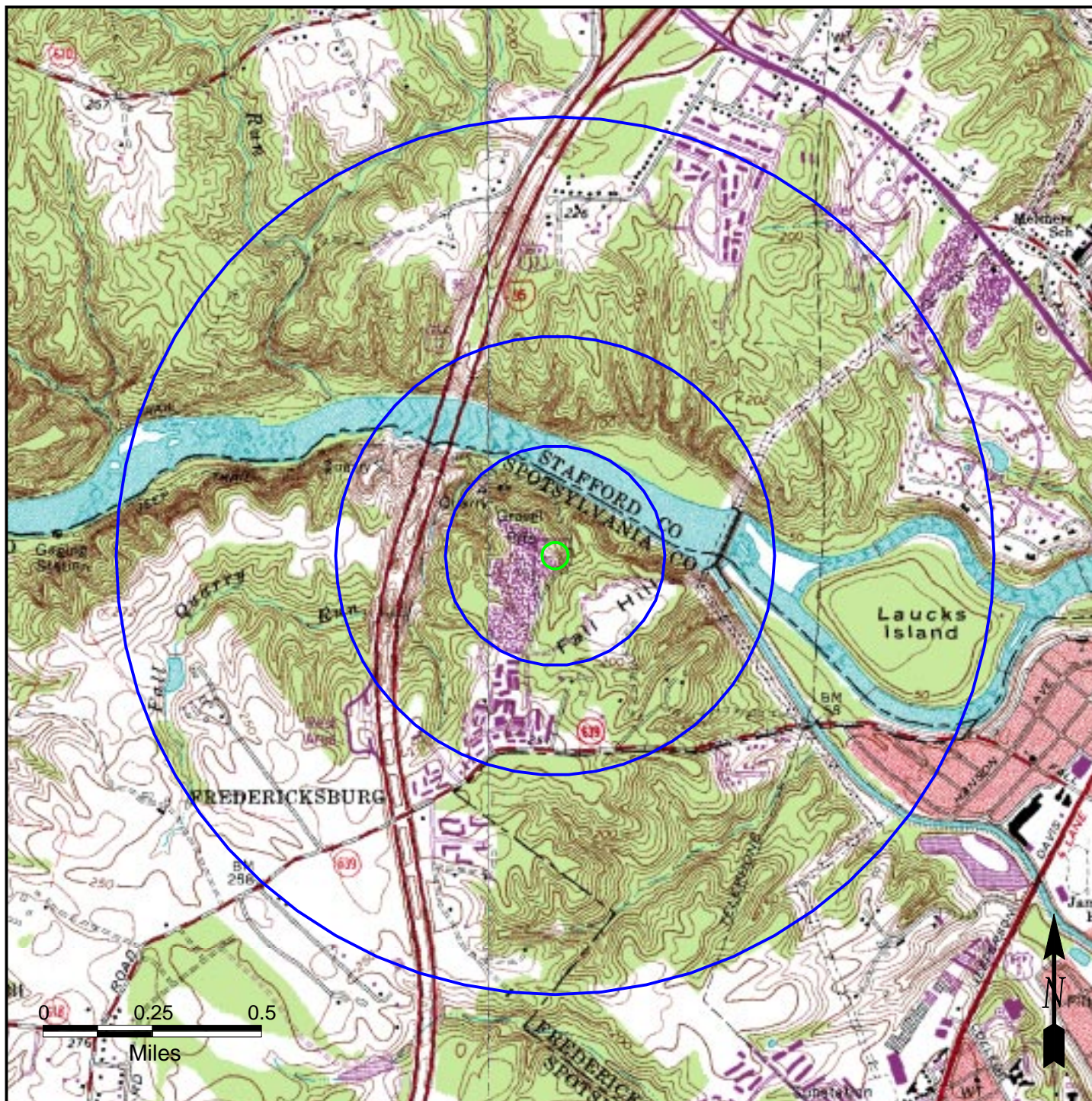
Fredericksburg, VA -- 1966

Photorevised 1984

Salem Church, VA -- 1966

Photorevised 1984

Photoinspected 1988



Source: United States Geological Survey, 7.5 minute Topographic Map (Digital Raster Graphics)

Site Summary

<u>Map ID#</u>	<u>Database / Agency ID#</u>	<u>Site Name, Address, and County</u>	<u>Distance/Direction</u>
----------------	------------------------------	---------------------------------------	---------------------------

No sites found within the study radii of your report.

-
- * -- Manually Geocoded: Site plotted or corrected using paper maps, phone calls, and other resources to properly place the site on the map.
- ** -- Agency Provided Lat/Long: Site plotted using the latitude and longitude given by the federal or state government agency.
- *** -- Area Manually Plotted: Area manually drawn using digital and paper maps.

Detailed Data

No environmental sites were found within the reported distances from your study site. There is no detailed data to report.

Unmappable Sites

A limitation of many records of governmental databases is incomplete or incorrect address information. Without proper addresses, it is more difficult to locate and map these sites.

Instead of leaving these potentially important sites out of the manually geocoded EcoSearch report, we implement a painstaking manual geocoding strategy aimed at plotting these unmappable sites by looking at zip codes, city names, and county names identified with the radius around your study site. The zip codes, cities, and counties searched are identified on the EcoSearch Statistical Overview page.

Our sophisticated mapping software, enhanced TIGER street maps, and address correction database processing methods find and plot most environmental sites. We then perform manual geocoding, plotting those sites the computer fails to find using a variety of resources. These include using our in-house collection of paper maps, directories, cross-referencing database information, and calling post offices, local government, or the sites themselves to accurately locate environmental records. We also correct obvious TIGER street map errors and omissions.

This effort at manual geocoding results in a short or non-existent orphan/unmappable list and increases accuracy and reliability of the data in our reports. The EcoSearch Instant Online and Preview reports take advantage of all previous geocoding work that has been done providing the highest quality report virtually instantaneously. The potential remains that an order can be placed in an area which has not been worked, thus resulting in more unmappables than typically associated with an EcoSearch report.

The limited number of sites which could not be reasonably found through our geocoding strategy are presented in this section for further review to assess their impact on your study site.

After the summary unmappable site information, the detailed data follows.

Unmappable Sites

<u>Database</u>	<u>Agency ID#</u>	<u>Site Name and Address</u>	<u>County</u>
UST Virginia Underground Storage Tank	3013776	CHARLIE BORNE FREDERICKSBURG, VA 22405	STAFFORD
UST Virginia Underground Storage Tank	3013774	VERNA ROBINSON FREDERICKSBURG, VA 22405	STAFFORD
UST Virginia Underground Storage Tank	3007097	PERRY SISSON RT. 12; BOX 89 FREDERICKSBURG, VA 22405	
UST Virginia Underground Storage Tank	3010398	WADEL & HELEN WOLFREY RR 16 BOX 1782 FREDERICKSBURG, VA 22405-9816	STAFFORD
UST Virginia Underground Storage Tank	3014058	PHILLIP H COLEMAN JR FREDERICKSBURG, VA 22401	SPOTSYLVANIA
UST Virginia Underground Storage Tank	3021554	RAY BARLEY FREDERICKSBURG, VA 22401	SPOTSYLVANIA
UST Virginia Underground Storage Tank	3014059	NELSON CROCKER RT. 2; BOX 828 FREDERICKSBURG, VA 22401	STAFFORD
UST Virginia Underground Storage Tank	3013778	ARTIS SCHONE FREDERICKSBURG, VA 22401	SPOTSYLVANIA

Virginia UST Data

Virginia Registered Underground Storage Tank Data

Map ID#:	1UN	Distance (mi):	0.00000			
		Direction:				
Agency ID:	3013776			Owner:	J.A. WERE COMPANY, INC	
Name:	CHARLIE BORNE			Owner Address:	4802 JEFFERSON DAVIS HIGHWAY	
Address:	Not Reportec			City, State, Zip:	FREDERICKSBURG, VA 22401	
City, State, Zip:	, VA 22405					
<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>	
1	CURRENTLY IN USE	GASOLINE	550.00	5/6/1971	Not Reported	

Map ID#:	2UN	Distance (mi):	0.00000			
		Direction:				
Agency ID:	3013774			Owner:	J.A. WERE COMPANY, INC	
Name:	VERNA ROBINSON			Owner Address:	4802 JEFFERSON DAVIS HIGHWAY	
Address:	Not Reportec			City, State, Zip:	FREDERICKSBURG, VA 22401	
City, State, Zip:	, VA 22405					
<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>	
1	CLOSED IN GROUND	GASOLINE	280.00	5/5/1976	5/5/1986	

Map ID#:	3UN	Distance (mi):	0.00000			
		Direction:				
Agency ID:	3007097			Owner:	Anderson Oil Company, Inc.	
Name:	PERRY SISSON			Owner Address:	1600 Dixon St	
Address:	RT. 12; BOX 89			City, State, Zip:	Fredericksburg, VA 22401	
City, State, Zip:	RT. 12; BOX 89, VA 22405					
<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>	
1	CURRENTLY IN USE	GASOLINE	1000.00	2/27/1987	Not Reported	
2	CURRENTLY IN USE	DIESEL	3000.00	3/24/1986	Not Reported	

Map ID#:	4UN	Distance (mi):	0.00000			
		Direction:				
Agency ID:	3010398			Owner:	WADEL & HELEN WOLFREY	
Name:	WADEL & HELEN WOLFREY			Owner Address:	RT 16, BOX 1782	
Address:	RR 16 BOX 1782			City, State, Zip:	FREDERICKSBURG, VA 22405	
City, State, Zip:	RR 16 BOX 1782, VA 22405					
<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>	
1	CURRENTLY IN USE	GASOLINE	550.00	5/1/1978	Not Reported	
2	CLOSED IN GROUND	GASOLINE	550.00	5/1/1978	10/1/1977	

Map ID#:	5UN	Distance (mi):	0.00000			
		Direction:				
Agency ID:	3014058			Owner:	Quarles Petroleum Inc	
Name:	PHILLIP H COLEMAN JR			Owner Address:	1701 Fall Hill Ave Suite 200	
Address:	Not Reportec			City, State, Zip:	FREDERICKSBURG, VA 22401	
City, State, Zip:	, VA 22401					
<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>	
1	REMOVED FROM GROUND	GASOLINE	550.00	4/16/1970	3/1/1989	

Virginia UST Data

Virginia Registered Underground Storage Tank Data

Map ID#: **6UN** Distance (mi): **0.00000**
Direction:

Agency ID: **3021554**
Name: **RAY BARLEY**
Address: **Not Reportec**
City, State, Zip: **, VA 22401**

Owner: **RAY BARLEY**
Owner Address: **ROUTE 8 BOX 420**
City, State, Zip: **FREDERICKSBURG, VA 22401**

<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>
1	CLOSED IN GROUND	GASOLINE			1/1/1974

Map ID#: **7UN** Distance (mi): **0.00000**
Direction:

Agency ID: **3014059**
Name: **NELSON CROCKER**
Address: **RT. 2; BOX 828**
City, State, Zip: **RT. 2; BOX 828, VA 22401**

Owner: **Quarles Petroleum Inc**
Owner Address: **1701 Fall Hill Ave Suite 200**
City, State, Zip: **FREDERICKSBURG, VA 22401**

<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>
R1	REMOVED FROM GROUND	GASOLINE	550.00	4/16/1972	7/1/1988
R2	REMOVED FROM GROUND	DIESEL	550.00	4/16/1972	7/1/1988

Map ID#: **8UN** Distance (mi): **0.00000**
Direction:

Agency ID: **3013778**
Name: **ARTIS SCHONE**
Address: **Not Reportec**
City, State, Zip: **, VA 22401**

Owner: **J.A. WERE COMPANY, INC**
Owner Address: **4802 JEFFERSON DAVIS HIGHWAY**
City, State, Zip: **FREDERICKSBURG, VA 22401**

<u>TankID#</u>	<u>Tank Status</u>	<u>Substance</u>	<u>Capacity</u>	<u>Install Dt</u>	<u>Closed Date</u>
1	CURRENTLY IN USE	GASOLINE	550.00	5/5/1976	Not Reported
2	CURRENTLY IN USE	GASOLINE	280.00	5/5/1976	Not Reported
3	CURRENTLY IN USE	DIESEL	280.00	5/5/1976	Not Reported

Environmental Glossary

Acid

A large class of substances having a pH less than seven. An acid waste is considered hazardous when the pH is 2.0 or less.

Acute Effect

An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis.

Acute Exposure

A dose that is delivered to the body in a single event or in a short period of time.

Aerobic

Occurring in the presence of free oxygen.

Alkaline

A substance with a pH between 7 and 14. An alkaline waste is considered hazardous when its pH is 12.5 or greater.

Ambient

Existing conditions of air, water, and other media at a particular time.

Anaerobic

Occurring in the absence of oxygen.

Assessment

An analysis or examination.

Background Environmental Sample

Samples that are considered to contain no contaminants or known concentrations of contaminants.

Base

A substance which forms a salt when reacted with an acid. Bases have a pH of greater than seven.

Buffer Zone

An area of land which surrounds a hazardous waste facility and on which certain land uses and activities are restricted to protect the public health and safety and the environment from existing or potential hazards caused by the migration of hazardous waste (CH&SC Sec. 25110.3).

Carcinogen

A substance or agent capable of causing or producing cancer in mammals.

Caustics

A large class of substances which form solutions having a high pH.

Chronic Effect

An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which reoccur frequently.

Chronic Exposure

Low doses repeatedly received by the body over a long period of time.

Combustible

A term used by the NFPA, DOT, and others to classify certain liquids that will burn, on the basis of flash points. Both the NFPA and DOT generally define "combustible liquids" as having a flash point of 100° F or higher.

Concentration

The relative amount of a substance when combined or mixed with other substances.

Contingency Plan

A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire or explosion or release of a hazardous waste from a TSD or a generator's facility that could threaten human health or the environment (RCRA).

Corrosive

As defined by DOT, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact or in the case of leakage from its packaging a liquid that has a severe corrosion rate on steel. A solid or liquid which exhibits these characteristics can be regulated as hazardous waste.

Decomposition

Breakdown of material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into elements or simpler compounds.

Decontamination

The process of removing contaminants from individuals and equipment.

Deep Well Injection

Disposal of wastes by injecting them into a geological formation deep in the ground, sometimes after pretreatment to avoid solidification.

EPA ID Number

This unique number assigned by EPA to each generator, transporter, or TSD.

Effluent

Waste material, either treated or untreated, discharged into the environment.

Environmental Assessment

The measurement or prediction of the transport, dispersion, and final location of a hazardous substance when released into the environment.

Environmental Emergencies

Incidents involving the release (or potential release) of hazardous materials into the environment which require immediate remedial action.

Environmental Hazard

A condition capable of posing risk of exposure to air, water, soil, plants, or wildlife.

Exception Report

A report that generators who transport waste off-site must submit if they do not receive a properly completed copy of their manifest within 45 days of the date on which the initial transporter accepted the waste.

Generator

The person or facility who, by nature or ownership, management or control, is responsible for causing or allowing to be caused, the creation of hazardous waste.

Glovebag

A device used to remove a section of pipe insulation without isolating the entire space or room.

Groundwater Hydrology

The study of the movement of water below the earth's surface.

Hazard

A circumstance or condition that can cause harm. Hazards are often categorized into four groups: biological, chemical, physical, and radiation.

Hazard Classes

A series of nine descriptive terms that have been established by the UN Committee of Experts to categorize the hazardous nature of chemical, physical, and biological materials. These categories are: flammable liquids, explosives, gases, oxidizers, radioactive materials, corrosives, flammable solids, poisonous and infectious substances, and dangerous substances.

Hazardous Waste

Any material that is subject to the hazardous waste manifest requirements of the EPA specified in the CFR, Title 40, Part 262 or would be subject to these requirements in the absence of an interim authorization to a State under CFR, Title 40, Part 123, Subpart F.

Heavy Metals

Certain metallic elements having a high density and generally toxic, e.g., lead, silver, mercury, and arsenic.

Immediate Removal

Actions undertaken to prevent or mitigate immediate and significant risk of harm to human life or health or the environment. As set forth in the National Contingency Plan, these actions shall be terminated after \$1 million has been obligated or six months have elapsed from the date of initial response.

Incident

The release or potential release of a hazardous substance into the environment.

Inert

Exhibiting no chemical activity; totally unreactive.

Innocent Land Owner's Defense

The defense of a purchaser of real property that he or she exercised due diligence in having hazards assessed prior to purchase.

Interim Status

Allows owners and operators of TSDs that were in existence, or for which construction had commenced, prior to November 19, 1980 to continue to operate without a permit after this date pending final issuance from RCRA.

Joint and Several Liability

Under federal law each party that contributed to damages may be held liable for all damages, but each has the right to compel the others to contribute and indemnify.

Liability

Being subject to legal action for one's behavior.

MSDS Material Safety Data Sheet

Required by OSHA of owners to alert employees to hazards, their effect, and protective action.

Manifest

Form which indicates generator, quantity, and type of waste for each shipment of hazardous wastes disposed in off-site facilities.

National Contingency Plan

Policies and procedures that the Federal Government follows in implementing responses to incidents involving hazardous substances.

P Wastes

A federal waste list comprised of substances categorized as acutely hazardous.

Part A

The first part of a two part application that must be submitted by a TSD to receive a permit. It contains general facility information.

Part B

The second part of a two part application that must be submitted by a TSD to receive a permit. It contains highly technical and detailed information.

Planned Removal

The removal of released hazardous substances from the environment within a non-immediate, long term time period. Under CERCLA: Actions intended to minimize increases in exposure such that time and cost commitments are limited to six months and/or \$1 million.

Poison, Class A

A DOT term for extremely dangerous poisons, that is, poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life. Some examples: phosgene, cyanogen, and hydrocyanic acid.

Poison, Class B

A DOT term for liquid, solid, paste, or semisolid substances, other than Class A poisons, which are known to be toxic to man as to afford a hazard to health during transportation.

Pollutant

A substance or mixture which after release into the environment and upon exposure to any organisms will or may reasonably be anticipated to cause adverse effects in such organisms and their offspring.

Priority Pollutants

A list of chemicals selected from the list of toxic pollutants by the EPA as priority toxic pollutants for regulation under the Clean Water Act.

Remedial Actions

Responses to releases of hazardous substances on the NPL that are consistent with a permanent remedy which would prevent or mitigate the migration of materials into the environment.

Risk

The probability that an unwanted event will occur.

Second Responders

Those personnel required to assist or relieve first responders at a hazardous material incident due to their specialized knowledge, equipment, or experience. These include State environmental protection or health officials, commercial response, cleanup companies, and appropriate industry representatives.

Strict Liability

Holds a party responsible for damages irrespective of the amount of care taken in handling a hazardous substance.

Subtitle C

The part of RCRA which pertains to the management of hazardous waste.

Subtitle I

The part of RCRA which pertains to the storage of petroleum products and hazardous substances, other than wastes, in USTs.

Superfund

See CERCLA.

Synerqistic

The action of two materials together which is greater in effect than the sum of the individuals actions.

TIGER Files

The US Census Bureau's TIGER files provide a nationwide computerized map with address range information.

Tort

A legal wrong, sometimes referred to as negligence.

Toxicity

The ability of a substance to produce injury by non-mechanical means once it reaches a susceptible site in or on the body.

U Wastes

A federal list of hazardous wastes which consists of substances deemed to be hazardous for hazards other than acute hazards.

Acronyms and Abbreviations

-AIRS	Aerometric Information Retrieval System
-AST	Aboveground Storage Tank
-ASTM	American Society for Testing and Materials
-BLM	Bureau of Land Management
-BNA	Bureau of National Affairs
-CAA	Clean Air Act
-CDC	Centers for Disease Control
-CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
-CERCLIS	CERCLA Information System
-CICIS	Chemicals in Commerce Information System
-COE	U.S. Army Corps of Engineers
-CWA	Clean Water Act
-DDT	Dichloro-diphenyl-dichloroethane
-DOC	Department of Commerce
-DOCKET	Enforcement Docket System--Office of Enforcement and Compliance Monitoring
-DOE	Department of Energy
-DOT	Department of Transportation
-EPA	Environmental Protection Agency
-ERCS	Emergency Response Cleanup Services
-ERNS	Emergency Response Notification System
-ESA	Environmental Site Assessment
-FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
-FINDS	Facility Index System
-FOIA	Freedom of Information Act
-FWPCA	Federal Water Pollution Control Act
-HHS	Department of Health and Human Services
-HSWA	Hazardous and Solid Waste Amendments of 1984
-HUD	Department of Housing and Urban Development
-LUST	Leaking Underground Storage Tank
-MSDS	Material Safety Data Sheet
-NEPA	National Environment Policy Act
-NESHAP	National Emission Standards for Hazardous Air Pollutants
-NFRAP	No Further Remedial Action Planned (Delisted CERCLA Site)
-NOI	Notice of Intent
-NOV	Notice of Violation
-NPDES	National Pollution Discharge Elimination System
-NPL	National Priorities List
-NRC	Nuclear Regulatory Commission
-NRIS	Nuclear Regulatory Information System
-OSHA	Occupational Safety and Health Administration
-PADS	PCB Activity Database System

Acronyms and Abbreviations

-PCB	Polychlorinated Biphenyls
-POTW	Publicly-Owned Treatment Works
-PPM	Parts Per Million
-PRP	Potentially Responsible Parties
-RAATS	RCRA Administrative Action Tracking System
-RCRA	Resource Conservation and Recovery Act of 1976
-RCRIS	Resource Conservation and Recovery Information System
-RFA	RCRA Facility Assessment
-RFI	RCRA Facility Investigation
-RI	Remedial Investigation (CERCLA)
-SARA	Superfund Amendments and Reauthorization Act of 1986
-SCS	Soil Conservation Service
-SDWA	Safe Drinking Water Act
-SETS	Superfund Enforcement Tracking System
-SSTS	Section Seven Tracking System
-SWF/LF	Solid Waste Facilities / Landfills
-TIGER	Topologically Integrated Geographic Encoding and Referencing System
-TRI	Toxic Release Inventory
-TSCA	Toxic Substances Control Act
-TSD	Treatment, Storage, or Disposal Facility
-USDA	U.S. Department of Agriculture
-USGS	U.S. Geological Survey
-UST	Underground Storage Tank
-WWTP	Wastewater Treatment Plant